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Tenth Report

OF THE

Bureau of

AGRICULTURE, LABOR AND INDUSTRY

OF THE

State of Montana

FOR THE YEAR ENDING NOVEMBER 30, 1906

J. A. FERGUSON, Comm ssioner
L. P. BENEDICT, Chief Clerk

"INDEPENDENT PUBLISHING COMPANY, HELENA, MONTANA."

STATE OF MONTANA.

BUREAU OF AGRICULTURE, LABOR AND INDUSTRY.

Helena, Montana, December 1, 1906.

To His Excellency, JOSEPH K. TOOLE,
Governor of Montana.

Sir: I have the honor to present you herewith the Tenth Report of the Bureau of Agriculture, Labor and Industry of the State of Montana. I am,

Very respectfully,

J. A. FERGUSON,
Commissioner.

CONTENTS.

Pages

MONTANA.

General Remarks Relating to Montana ..... 1 to 6

LANDS.

Homesteading ..... 7 to 14
Timber and Stone Entries 15
Homesteading on Reclamation Tracts ..... 16 and 17
Desert Lands ..... 17 and 18
Manner of Acquiring Townsites on Public Lands ..... 18 to 21
Entries for Cemeteries and Park Purposes 21
Locating a Mineral Claim ..... 21 to 26
Opening Indian Reservations ..... 26 to 31
State Lands ..... 32 to 34
Leasing of State Lands ..... 33 and 34
Forest Reserves ..... 35 to 62
Homesteading on Forest Reserves 47
Mining on Forest Reserves 52
Townsites on Forest Reserves 52
Lieu Selection on Forest Reserves 53
Jurisdiction on Forest Reserves ..... 53 to 56
Grazing on Forest Reserves ..... 56 to 59
Trespass on Forest Reserves ..... 59 to 61
The Forest Service ..... 61 and 62

IRRIGATION.

The Reclamation Service ..... 63 and 64
Government Reclamation 64
St. Mary and Milk River Irrigation Projects ..... 65 to 72
Marias Project ..... 72 to 74
Sun River Project ..... 74 to 77
Ft. Shaw Project 77
The Madison River Project ..... 77 and 78
The Huntley Project ..... 78 to 80
Waco-Sanders Project 80
Big Horn Sub-Project ..... 80 and 81
By-Laws Lower Yellowstone Water Users' Association ..... 81 to 87
Lake Basin Project 87
Clark Fork Reconnaisance ..... 87 to 89
Lower Yellowstone Project 89
Lower Yellowstone Water Users' Association ..... 90 to 93
Lower Milk River Water Users' Association ..... 93 and 94
Water Rights Under Government Works ..... 94 and 95
Progress of the Reclamation Service ..... 95 and 96
Practical Irrigation ..... 97 to 124

AGRICULTURE.

General Comment ..... 125 to 130
Adulterated Seeds 131
Elevator Storage Capacity 132
Dry Land Farming ..... 133 to 136
Soil Inoculation ..... 137 to 141
When Inoculation is Necessary 137
Sugar Beets ..... 142 to 157
Farmers' Organizations ..... 158 to 162
Creameries ..... 163 to 164
Livestock ..... 165 to 200
Livestock Associations ..... 172 to 174

Pages

Sheep and Wool ..... 175 to 200
Sheep Shearing ..... 198 and 199
Hogs ..... 199 to 200
Horses 200
Mules 200

LABOR.

Child Labor ..... 208 to 210
Employers' Liability Law ..... 211 to 213
The Eigth-Hour Day ..... 214 to 226
Hours of Railway Employees ..... 227 to 229
Enforcement of Labor Laws ..... 230 to 231
Wages ..... 232 to 234
Spotted Fever ..... 235 to 237
Directory of Labor Organizations ..... 238 to 242
Butte Free Public Employment Office ..... 243 and 244
Great Falls Free Public Employment Office 245

THE INDUSTRIES.

Mineral Production ..... 246 to 268
Coal ..... 269 to 283
Brick ..... 284 and 285
Saw Mills ..... 286 to 290
Breweries 291
Montana Chemical Co. ..... 292 to 294
The Helena Power Transmission Co. ..... 295 to 296
A Distillery 297
The Second Montana Woolen Mill 298
Knitting Mills 298
Food Manufactures 299
Packing Plants ..... 300 to 301
Railroad Construction ..... 302 to 303

MISCELLANEOUS.

Remarks 304
Review of the Counties and Their Resources ..... 304 to 364
Libraries ..... 365 to 370
Directory of Territorial Officers in Montana to 1889 ..... 371 to 373
Directory of Officers in Montana since Statehood ..... 374 to 377
Assessed Valuations, 1905 ..... 378 to 387
Assessed Valuations, 1906 ..... 388 to 396
Penitentiary Statistics 1896 to 1905 397
Penitentiary Statistics, 1904 and 1905 ..... 398 to 403
Insane Asylum Statistics, 1904 and 1905 ..... 404 to 411
Revenue From Licenses, 1904 and 1905 ..... 412 to 417
Court Statistics, 1904 and 1905 ..... 418 to 419
Naturalizations ..... 420 to 424
Divorces, 1904 and 1905 ..... 425 and 426
Jail Incarcerations, 1904 and 1905 ..... 427 and 428
Directory of U. S. Officials ..... 429 to 432
Representative Districts and Apportionment 433
Members of the Senate of the Tenth Legislative Assembly 433
Members of the House of Representatives of the Tenth Legislative Assembly 434
Roster of the Senate 435
Roster of the House 435
Directory of State Officials and Boards ..... 436 to 447
Directory of County Officials ..... 448 to 461
Directory of Postoffices in Montana ..... 462 to 466
Altitudes 467
Summary of Election Returns 468

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S L HERD MOVING OUT FROM CAMP IN THE MORNING
POWDER RIVER

MONTANA.

Even a cursory study of present conditions and future prospects in Montana is sufficient to convince the most skeptical that the measure of successful achievement coincident with intelligent industry is not excelled and but rarely approached by any other community on earth. The record of present development, great as it now appears, will be looked upon in future years as crude and elemental. The production of precious metals is only begun. Agriculture and irrigation have barely passed the preliminary stages. The livestock industry is even now undergoing changes which will make the present output appear ridiculous. Development of water power in almost unlimited degree will work a revolution in manufacturing industries, a field now sadly neglected. The building of new railroads and the extension of old ones will enable hundreds of prospects to become paying mines, develop agricultural districts now idle for want of access to market, and create busy towns and cities in what is now a wilderness. Electric roads will supply transportation to thousands of prosperous farms which in that time will be watered from the government irrigation projects, and the products of this pleasant toil will enrich the State and its people. Nature created Montana upon a broad plan, and there is enough and to spare, for a population ten times as great as that which now occupies its vast domain; nor does it require the gift of prophecy to proclaim the coming of this greater population. Preparations have been made for its advent, and it is even now on the way. New towns are being established, industries that have been mentioned, but scarcely hoped for, are being created and put into active and successful operation; land values are being steadily advanced as experience proves the soil capable of earning a large dividend upon the increased valuation; Government and State land known to be agricultural is becoming more difficult to obtain, and the various land offices report a volume of business hitherto unprecedented.

Inquiries come from every quarter asking information and advice, and there is no longer room to doubt that a great movement of settlers and investors toward Montana has begun. That this extension of the population will necessitate great changes in present conditions is admitted and accepted. Many of the enormous individual land holdings are being and will continue to be subdivided, and an era of intensive farming on tracts ranging from forty acres up must be inaugurated.

Ranging of livestock in great bands upon public or semi public lands will soon become obsolete, except in such districts as can never be other than grazing though this must not be taken to indicate a diminution in either the value or number of cattle, sheep or horses. On the contrary, one has but to consider the feeding power of twenty acres of grazing land now necessary

for one steer in contrast with the productivity of that same land growing 80 or 100 tons of alfalfa under water, to realize what such a change will mean to the livestock industry.

In this connection it is also well to remember that the valuation placed upon grazing land seldom exceeds three dollars an acre, and that much of the land proposed to be reclaimed by the Government is now devoted solely to that purpose. So great is the land area of Montana that every man, woman and child now living in the State could enjoy possession of 320 acres, if its 93,000,000 acres were equally distributed. Of this vast area perhaps 35,000,000 acres are still unsurveyed.

The General Land Office, on July 1, 1905, reported the status of lands in Montana as follows: Area surveyed and open for settlement, 19,241,264 acres; area unsurveyed, 36,507,106 acres; area reserved 18,566,188 acres; area appropriated, 19,279,012 acres.

For an arid state, Montana is most generously supplied with rivers, lakes and springs available for irrigating purposes. Indeed, it is said that no other state, with the exception of Texas, has anything like the water that finds its source in Montana. Some of the smaller streams have been wholly appropriated, and practically all the available land in their vicinity has been placed under cultivation. None of the larger streams have been utilized to anything approaching this extent and few of them have ever been measured.

It is but fair to say, however, that any considerable extension of the irrigated area will necessitate one of three proceedings: First, by the Government; second, by large expenditure of private capital and, third, by co-operation of farmers who are individually unable to construct a private ditch to their own property. Indeed, the latter method, already successfully and economically practiced in many localities, seems to offer greater advantages than the private corporation plan.

There are but few instances in the United States where corporation, or wealthy individual irrigating plants, have proven remunerative for the reason that farmers generally are unwilling to trust their lives' enterprise to the whim, caprice, or iron-clad contract of any other person or corporation, especially in so vital a matter as water for growing crops. It must be understood that the opportunity for securing a tract of public land upon which an individual may with his own efforts conduct water, is decidedly limited, and that while water is not in every case an absolute necessity to insure a crop, it is a most desirable adjunct in all instances and will add greatly to the value and productivity of any parcel of land in the State.

Undoubtedly the greatest agricultural opportunities in the State lie in obtaining a homestead under one of the government reclamation projects with ten years to complete the necessary payments. A recent Government bulletin has this to say of the climate:

"The climate of Montana is arid and is typical of much of the Rocky Mountain region, but nearly 70 per cent of the average yearly precipitation of 14.5 inches occurs during the crop growing season. Few records have been taken to show the heavy precipitation on the mountain slopes. The officers

of Fort Yellowstone, in the Yellowstone National Park, claim that the depth of snow varies from ten feet in the neighborhood of Mammoth Hot Springs to twenty feet at the higher elevations within and adjacent to the park.

"The light snowfall in the valleys throughout the State during the winter months, is usually speedily evaporated by the chinook winds which are prevalent from Oregon to Nebraska, and from the Peace river to Arizona, being particularly common in Montana where they do much to modify the climate. The effect of one of these warm winds is aptly described in the Montana Weather Report:

" 'On the evening of December 1, 1896, the temperature at Kipp was thirteen below zero. The air was scarcely moving and the sky was clear. Suddenly, over the edge of the mountains in the southwest appeared a great bank of black clouds, their outer edges blown into tatters by the wind. In a few minutes a short puff of hot, dry air had reached the plains, and in the following seven minutes the temperature had risen 34 degrees. The wind increased in velocity to 25 miles and the temperature rose to 38 dgrees. Within twelve hours every vestige of the 30 inches of snow had disappeared leaving the hills bare and the plains covered with water.' "

Similar experiences, though perhaps not so marked, are common throughout the State. While the temperature often reaches 40 degrees below zero at Havre, which lies in the direct path of the winter storms from the north and northwest, the lowest record at Missoula for twenty-three years is 22 degrees below, and in some winters the mercury does not go below the zero point.

Generally speaking, in spite of occasional severe storms, the winters are delightful, some of the plowing being done during the months of January and February. A bad storm generally occurs in November, or possibly as early as October, and then follows week after week of ideal weather, broken only by a spasm of extreme cold which seldom lasts more than a week.

In many parts of the State the spring months are the most disagreeable. March, April and May are the worst, and the sunshine of June 1 is often obscured by showers of soft snow. But with two hundred and seventy-three sunshiny days and only nine-two rainy days in the year, the Montana farmer receives with gratitude his allotment of June snow because it benefits his crops and may save him the work of a second irrigation.

These early snows are specially welcome on the ranges, as the moisture from them is not so readily dissipated as is rain.

There are occasional periods of hot weather in the summer, but the altitude and atmospheric conditions are such that sundown always brings relief, and cool, refreshing sleep is possible everywhere every night during the heated term. Such oppressive humidity as exists in the East is wholly absent and cases of sunstroke are so few as to be practically unknown. Altogether no more salubrious, healthful and delightful northern climate can be found.

The following data from Hayden's survey regarding the general altitude of the State may serve to correct an impression that Montana is merely a collection of mountains, snow-clad, rugged and barren, lying so high above the sea as to be undesirable as a place of residence and fit only for mining,

stock raising and hunting. The facts are that more than 40 per cent of its area has an altitude of less than 5,000 feet above sea level, the greater part of the northeastern portion below 3,000 feet, and many of its valleys above 2,200 feet. But seven per cent of the state has an altitude of 8,000 feet, nine per cent 7,000 feet 14 per cent 6,000 feet, and 21 per cent 5,000 feet. The average altitude of the state is below 3,900 feet, while that of Colorado is 7,000 feet; Nevada, 5,600 feet; Wyoming, 6,500 feet. Montana has 51,600 square miles that lie below 4,000 feet, while Colorado has but 9,000 square

MISSOURI AVENUE, DEER LODGE—THE PRINCIPAL RESIDENCE STREET.

miles as low, and added to this great tract of moderately low altitude Montana has 40,700 square miles that lie below 3,000 feet above sea level. In natural resources this extensive area is unsurpassed. Its mountains contain nearly every precious metal known to man, besides vast deposits of coal, marble onyx, asbestos, iron, graphite corundum, and other valuable and useful materials.

Millions of dollars have been taken from the placer deposits, and the gold output of the State is still largely augmented every year by the proceeds from this class of mining. The production of copper, already a great factor in the world's output, is being increased every year, new mines being found in both old and new districts and the operations of producing mines being largely extended.

Montana lumber is now being sent to the territory formerly supplied by

the mills of Michigan, Wisconsin and Minnesota at prices which are highly remunerative.

Agricultural development is such that the state is being rapidly redeemed from the disgrace of importing farm produce to supply home demands, though there is still much to be accomplished in this direction.

A beet sugar plant is now in operation and others are projected with every promise of consummation, thus opening a new avenue of profit to the farmers.

Drilling for oil in four different sections of the state is being vigorously prosecuted, and from present indications there is every reason to believe that both oil and gas will be found in paying quantities.

Deposits of marl and gypsum are being explored both by the government and by private parties with gratifying results.

Railroad building and the operations of the Reclamation Service are putting thousands of dollars into circulation and utilizing vast quantities of natural and artificial products of the State, while mountains, rivers and forests each are made to contribute their quota to the general activity and progress.

The livestock industry for some time past not in the very best condition, is again on the upward path, and stockmen generally would be satisfied to see present conditions continued. Markets for all farm products are good and there is plenty of demand for more than is now produced in nearly every part of the state.

Labor conditions are generally satisfactory, and while there is not much demand for a greater number of skilled mechanics, contractors on general construction works are advertising for men, teams and common laborers.

Educational advantages are exceptionally good in Montana, the higher institutions ranking with those of many of the older states. These include the University at Missoula, the Agricultural College at Bozeman, the School of Mines at Butte, and the Normal School at Dillon, all supported by the State, besides many private and religious colleges and schools.

Public money available for school purposes in 1905 was $2,258,635.38, an average of $32 for each child of school age. The schools occupy modern buildings which are the pride of each community, representing, as they do, an investment of $3,100,000. This sum includes nothing but county and city public school buildings. Funds for maintenance are derived from the sale and lease of school lands and special tax levies by counties, to which will now be added 10 per cent of the income from forest reserves.

Regarding industrial opportunities, there are openings in practically every avenue of human endeavor. In no single instance is there the least evidence of crowding or congestion. The practical man from other sections of the country regards with amazement the unoccupied fields of profitable industry and readily makes an investment confident that future results will justify his judgment.

The Montana standard of living is high and her people are the best buyers in the world.

The manufacture of necessities forms an infinitesimal portion of the yearly

consumption and in this direction opportunity for successful enterprise is unlimited. Scarcely a flour mill in the State operates the year round on Montana grown grain. Of the 65,000,000 feet of fuse used in the Butte mines each year not a single foot is made in Montana, and, although one of the largest consumers of powder, all of this commodity is purchased outside the State. In the market for thousands of barrels of cement for private and public purposes, and with unlimited material for its manufacture, as yet not a barrel of this commodity now coming into such general use is produced here.

No part of the 314,750,582 pounds of copper taken from the mines during the year 1905 was manufactured into articles of every-day use.

Forty million pounds of wool are allowed to leave the state each year without even being scoured, there being but one small woolen mill in operation.

The greater part of the beef fattened upon native grasses and forage crops is sent out on foot instead of being dressed in Montana packing houses.

This list could be extended almost indefinitely, but enough has been mentioned to warrant the confident assertion that Montana offers an unsurpassed field for investors and settlers, from the man with millions to develop a mining property, harness the water power of a mighty river or build a railroad to the humble homesteader whose chief capital is ambition and energy.

WE GROW CORN, TOO.

PUBLIC LANDS.

Slowly but surely the time is drawing near when the prophecy of increased population and agricultural development of Montana is to be fulfilled.

There are evidences of healthy growth in nearly every section of the State, and while some time must necessarily elapse before all the plans now under way, or contemplated, can be fully carried out, it is not too early to scatter broadcast over the world in as full and definite a manner as possible what Montana has to offer to settlers of all classes. Numerous as are the opportunities which present themselves for consideration in this commonwealth, the one which leaps at once into prominence and virtually includes all others, is land—chief of all resources; at once the foundation and superstructure of stability and progress. How to obtain land is the problem of the landless millions; how to secure settlers the problem of the State fortunate enough to possess manless land.

From present indications many of the conditions which have heretofore operated as hindrances to the rapid settlement of Montana are to be changed, in which event there will be room for thousands of newcomers to secure a freehold.

Chief among these changes are the opening of forest reserves to homesteaders and the early completion of one or more of the government irrigation projects. Meanwhile there are various ways by which the settler may obtain title to a parcel of vacant, public land, all of which are minutely described in this book under their respective titles, and as they may involve the securing of a home and consequent prosperity and independence, a careful study of the requirements of the different laws is suggested.

HOMESTEADING.

In presenting the information grouped under this heading an effort has been made to present the requirements of the Homestead law from the standpoint of the stranger who desires to become a resident freeholder in Montana under that law. The simple statement that "settlers must file on the land at the land office in the district in which such land is located," is neither specific nor satisfying. There are those who, through experience or in some other manner, have acquired a general knowledge of the Homestead law; but it is clearly evident from inquiries received that there is not only a widespread ignorance concerning it, but in consequence of the general land hunger throughout the United States there is a greater desire for non-technical information whereby the average man may instruct himself upon the methods of locating a homestead.

It may be well to say in the beginning that there are no maps or plats

showing the location of lands subject to homestead entry available for general distribution. These maps are part of the records of the various land offices, and may be consulted there, but nowhere else. Also that the various blank forms which must be filled out may be obtained at the same place, and that all business connected with government land must be conducted with or through the government land offices.

The homestead laws secure to qualified persons the right to settle upon, enter and acquire title to not exceeding one quarter section, or 160 acres of public land, by establishing and maintaining residence thereon and improving and cultivating the land for the continuous period of five years. Section 2289 of the Revised Statutes describes the class of lands subject to homestead entry simply as unappropriated public land. At the start the one great obstacle which must be overcome is to find a suitable tract of unappropriated public land in a location and with such surroundings that a reasonable expenditure of labor and money will develop a satisfactory home. To conduct the search for such a spot requires, above everything else, personal investigation, not alone of the records but of the ground itself. In this matter it is more than ever true that no one can do business for you as you will do it for yourself, and as, generally speaking, a person can exercise his rights under the law but once, and the selection of a permanent home is so important, every intending settler should decide, even before making inquiries, whether it is possible for him to see the land first.

Having satisfied himself by personal inspection of the character and true description of the land, the settler must make application upon a blank furnished by the land office in the district in which such land is located, to enter upon it as a homestead. The description by metes and bounds which the entry blank requires may be secured by consulting the plats in the land office or by hearsay from another person who has already settled in the vicinity, but in both cases error is liable to occur which will cause much trouble later, and while the law does not require it, the better way is to make personal inspection of the land, locating a corner from an adjoining claim or, better still, a full description of it and verify this by the plats in the land office thus making it absolutely certain the application contains an accurate description of the plat of land desired and no other.

When this information is obtained, the next step is to file the application with the land office. This blank, when properly filled out, shows the name and postoffice address of the locator, and describes the land by section, township, range and number of acres, and must be followed by an affidavit showing that the locator is not the proprietor of more than 160 acres of land in any state or territory; that he is a citizen of the United States, or has declared his intention to become such, and that he is the head of a family or over 21 years of age, as the case may be; that his application is honestly and in good faith made for the purpose of actual settlement and cultivation, and not for the benefit of any other person, persons or corporation, and that he will faithfully and honestly endeavor to comply with all the requirements of law as to settlement, residence and cultivation necessary to acquire title to the land applied

MAKING HAY IN MONTANA.

for; that he is not acting as agent of any person, corporation or syndicate in making such entry, nor in collusion with any person, corporation or syndicate to give them the benefit of the land entered, or any part thereof, or the timber thereon; that he does not apply to enter the same for the purpose of speculation, but in good faith to obtain a home for himself, and that he has not, directly or indirectly made, and will not make any agreement or contract in any way or manner with any person or persons, corporation or syndicate whatsoever, by which the title which he may acquire from the government of the United States that will inure in whole or in part to the benefit of any person except himself; and, further, that since August 30, 1890, he has not acquired title to, nor is he claiming under any of the agricultural public land laws an amount of land which, together with the land he is seeking to enter, will exceed in the aggregate 320 acres and that he has not therefore had the benefit of the homestead laws. He must pay the legal fee and that part of the commissions which is payable when entry is made.

On compliance by the locator with the foregoing requirements the receiver will issue his receipt for the fee and that part of the commissions paid, and the matter will then be entered on the records of the district office and reported to the General Land Office.

A homestead settler on unsurveyed public land not yet open to entry must make entry within three months after the filing of the township plat of survey in the district land office. In cases of simultaneous applications to enter the same tract of land under the Homestead laws the rule is as follows: First, where neither party has improvements on the land, the right of entry should be awarded to the highest bidder. Second, where one has actual settlement and improvements and the other has not, it should be awarded to the actual settler. Third, where both allege settlement and improvements an investigation must be had and the right of entry awarded to the one who shows prior actual settlement and substantial improvements, so as to be notice on the ground to any competitor.

The land office fees and commissions payable when application for entry is made are as follows:

	Land at $2.50 per acre.	Land at $1.25 per acre.
For 160 acres	$22.00	$16.00
For 80 acres	11.00	8.00
For 40 acres	8.00	6.50

An inceptive right is vested in the settler by the proceedings thus described. He is now required, within six months after making his entry, to establish his actual residence in a house upon the land and must reside upon and cultivate the land continuously in accordance with law for the term of five years. Occasional visits to the land once in six months or oftener do not constitute residence. The homestead party must actually inhabit the land and make it the home of himself and family as well as cultivate and improve it. There are certain leaves of absence provided for, which may be granted by the register and receiver of the proper district land office for periods not to exceed one year at any one time.

The applicant for such permission will be required to submit testimony to consist of his own affidavit, corroborated by the affidavits of disinterested witnesses, setting forth in detail these facts. That he is unable by reason of a total or partial destruction or failure of crops, sickness or other unavoidable casualty to secure a support for himself or those dependent upon him on the land settled upon. The register and receiver may deny the application, whereupon the settler may appeal to the Genral Land Office. Provision is also made for extending the time allowed for establishing residence after date of entry to twelve months when climatic conditions are such as to prevent occupancy. Storms, floods, blockades by snow or ice or other hindrances caused by climatic conditions must be proven by affidavit.

Title to a homestead may be obtained in less than five years by commutation, or cash payment, or military bounty land warrants, Agricultural College scrip, and private land claim scrip may be located in lieu of cash payment, but such commutation does not excuse from any cause failure to live upon, improve and cultivate the land for the required period of five years. Settlers are not obliged to make proof in the short time in which commutation is allowed, and when such proof is made full compliance with the law must be satisfactorily shown. To entitle a homestead claimant to commute his entry he must prove his actual residence, improvement and cultivation for not less than fourteen months from date of settlement.

A person commuting a homestead entry by false swearing, when he has not actually complied with the law, forfeits all right to the land and to the purchase money paid, and in addition thereto renders himself liable to criminal prosecution. The sale of a homestead claim by the settler to another party before becoming entitled to a patent vests no title or equities in the purchaser as against the United States. One is permitted to sell the improvements, but the purchaser is required to enter, live upon and cultivate the land in the same manner and for the same number of years as the original entryman.

And now, having fully complied with the law and the required five years having elapsed comes the work of final proof and acquirement of patent or title from the Government. A settler desiring to make final proof must file with the register of the proper land office a written notice, in the prescribed form, of his intention to do so, which notice will be published by the register in a newspaper, to be designated by him as nearest the land, once a week for five successive weeks, at the applicant's expense. Applicants should begin to make their final proofs in sufficient time to complete and file them in the local office within the statutory period of seven years from date of entry. The final affidavits and proof may be made before the register or receiver, or before any United States commissioner or commissioner of the court exercising federal jurisdiction in the Territory, or before the judge or clerk of any court of record in the land district in which the lands are situated. Provided, that in case the affidavits and proof are taken out of the county in which the land is located, the applicant must show, by affidavit satisfactory to the Commissioner of the General Land Office, that said affidavits and proof were taken before the nearest or most accessible officer qualified to take the same in the

land district in which the land entered is located, but such showing by affidavit need not be made if the proof be taken in the town or city where the newspaper is published in which final proof notice is printed. Proofs can only be made by the homestead claimant in person, and cannot be made by an agent, attorney, assignee, or other person, except that in case of the death of the entryman proof can be made by the statutory successor to the homestead right in the manner provided by law, and the rights of a claimant who has become insane, may be proved up and his claim perfected by any person authorized to act for him during his disability.

The notice of intention to make final proof must give the names of two witnesses, and the notice for publication the names of four witnesses to swear to the continuous residence upon and cultivation of the land.

The final affidavit must contain a description of the entry by section, township, and range; that the claimant is a citizen of the United States; that he has made actual settlement upon and cultivated the land, and the length of time he has occupied it; that he is the sole bona fide owner as an actual settler; take the oath of allegiance to the Government, and also swear that he has not heretofore perfected or abandoned an entry made under the Homestead laws. The testimony of the claimant and the witnesses is then taken, payment is made of the fees and commissions incident to final proof, as well as for each acre of the claim at the rate of $1.25 or $2.50 an acre, according to the classification of the land. The fees and commissions payable on final proof are as follows:

	Land at $2.50 per acre.	Land at $1.25 per acre.
For 160 acres	$12.00	$6.00
For 80 acres	6.00	3.00
For 40 acres	3.00	1.50

Upon payment being made in full the Register issues a certificate to that effect, and upon presentation of this certificate to the Commissioner of the General Land Office the patent or title is issued and the claimant then comes into full legal possession of the land.

Aside from the foregoing rules and laws there are various others relating to matters connected with homesteading which it is impossible to reproduce here, though some of them will be referred to briefly. While the law only allows one homestead privilege to any one person, there are certain cases where it is possible under a recent act of Congress where a second entry may be made. This act allows any person who has heretofore made a homestead entry and was unable to perfect the same on account of some unavoidable complication of business or personal affairs, or on account of an honest mistake as to the character of the land to make a second entry providing it is shown to the satisfaction of the Commissioner of the General Land Office that a bona fide effort was made to comply with the Homestead law, and that the entry was not relinquished nor the claim abandoned for a consideration.

The entryman is required to make a formal application for a specified piece of land on the regular homestead blanks modified to show that the entry is made under the Act of April 28, 1904, and must furnish a description of

the former entry by section, township and range, or the number of the entry and the land office where the filing was made. He must also furnish an affidavit, corroborated by one or more disinterested persons, setting forth in full the reasons which prevented the perfecting of the title to the land covered by the first entry, or, where the failure to perfect title was caused by a mistake as to the character of the land entered, the manner in which such mistake occurred, and the specific reasons that rendered the land worthless for agricultural purposes must be fully set forth. The affidavit must also show

IRRIGATING THE SUGAR BEETS.

whether the applicant ever resided upon, cultivated or improved the land embraced in the former entry, and if so, to what extent, and that the claim was not abandoned or the entry relinquished for a valuable consideration.

The same act also provides for a second entry of land sufficient to make a full claim of 160 acres where the first entry was made for a less number of acres than a quarter section, and applies to entries made subsequent to April 28, 1904, as well as to those made before that time. The land to be secured by the second entry must be contiguous to that embraced by the first entry, but no residence upon the new land is required; but no party shall have the benefit of this act who does not at the date of application own and occupy the land covered by the original entry, and fraud or illegality in the original entry shall operate to cancel the subsequent entry. Commutation is also prohibited. It should be remembered that this part of the act applies only in cases where the original entry was for a tract of less than 160 acres, and is only available for the purpose of acquiring a full quarter section under the Homestead law.

An unmarried woman of legal age can take the benefit of the Homestead law. If she marries before she has acquired title and continues her residence on the claim, she can proceed to prove up at the proper time the same as if she had remained single, but husband and wife cannot secure separate tracts by maintaining separate residences at the same time. All the sons and daughters of a family are entitled to take up land under the United States land laws.

Soldiers who served in the army or navy during the War of the Rebellion or in the Spanish or Philippine war for more than ninety days can obtain 160 acres of any of the public lands by filing (himself, or by an attorney), a declaratory statement, and within six months thereafter filing his affidavit and application, commencing settlement and cultivation, and continuing the same for five years, less the time he served in the army or navy; but such time in no case to exceed five years. A soldier's widow has the same privilege. In case of his death in the army or his discharge therefrom on account of wounds or disability incurred in the discharge of his duty, the term of his enlistment is deducted. In case of the death of a soldier, his widow, if unmarried, or in case of her death or marriage, then his minor orphan children by a guardian duly appointed and officially credited at the Department of the Interior, shall be entitled to all the benefits given to soldiers under the Homestead laws. Neither the widow nor the heirs are required to live on the land, but they must keep up the cultivation and the improvements.

Soldiers, or if dead, their widows and children, have the privilege not accorded to any other person of filing on a homestead either in person or through an agent.

Abandonment or change of residence from a homestead for six months or more at any time, leaves it liable to contest, unless leave of absence has been obtained. Occasional visits to the land, staying over night once in six months, even under leave of absence, is a very dangerous practice, and many very valuable claims have been lost in this way.

No lands acquired under the provisions of the Homestead law are liable for the satisfaction of any debt contracted prior to the issue of the patent.

Homestead claimants who have made bona fide settlements upon public land and who are living upon, cultivating and improving the same in accordance with law, with the intention of acquiring title thereto, are permitted to cut and remove from the portion thereof to be cleared for cultivation so much timber as is actually necessary for that purpose, or for buildings, fences and other improvement on the land entered. In clearing for cultivation, should there be a surplus of timber over what is needed for the purposes above specified the entryman may sell or dispose of such surplus; but it is not allowable to denude the land of its timber for the purpose of sale or speculation before the title has been conveyed to him by patent.

The abandonment of a settlement claim after the timber has been removed is presumptive evidence that the claim was made for the primary purpose of obtaining timber, and therefore illegal.

Squatters upon public lands have no right to cut timber therefrom for any purpose.

Where a wife has been divorced or deserted, so that she is dependent upon her own resources for support, she can make a homestead entry as the head of a family, or as a feme sole.

Where a homestead settler dies before the consummation of his claim, the widow, or in case of her death, the heirs may continue settlement or cultivation, and obtain title upon requisite proof at the proper time. If the widow proves up, title passes to her; if she dies before proving up, and the heirs make the proof, the title will vest in them.

Where both parents die, leaving infant children, the homestead may be sold for cash for the benefit of such children, and the purchaser will receive title from the United States, or residence and cultivation may continue for the prescribed period, when the patent will issue to the children.

Upon the death of a homesteader who leaves no widow, but both adult and minor heirs, the right to perfect entry passes alike to all the heirs.

A homestead right cannot be devised away from a widow or minor children.

Any person may contest an entry, location, or selection made under any law of the United States, for any sufficient cause affecting the legality or validity of the same. A person who contests and secures the cancellation of any claim, has a preference right for thirty days in which to enter the land formerly covered by the contested entry.

SECOND ENTRY OF HOMESTEAD.

Under the Act of June 5, 1900 (31 Stat. 267), any person who, prior to June 5, 1900, made a homestead entry but from any cause had lost, forfeited, or commuted the same, is entitled to make a second homestead entry.

Under the Act of May 22, 1902, (32 Stat. 203), any person who made final five years' proof prior to May 17, 1900, on lands to be sold for the benefit of Indians and paid the price provided by law, opening the land to settlement, and who would have been entitled under the "Free Homestead" law to have received title without such payment had not proof been made prior thereto, is entitled to make second homestead entry.

Under the Act of April 28, 1904, (Public No. 208), any person who prior to April 28, 1904, made homestead entry but was unable to perfect the entry on account of some unavoidable complication of his personal or business affairs, or on account of an honest mistake as to the character of the land, provided he made a bona fide effort to comply with the Homestead Law, and did not relinquish his entry for a consideration, is entitled to make a second homestead entry.

Under Section 2 of this act any person who has made homestead entry of a quantity of land containing less than one hundred and sixty acres, contiguous to the ceded lands of a reservation, and is still owning and occupying the same when said reservation is opened for settlement, may enter a sufficient quantity to make up the full amount of 160 acres.

Under Section 6 of the Act of March 2, 1889 (25 Stat. 854) any person who has made a homestead entry for less than 160 acres and has received

the receiver's final receipt therefor, is entitled to enter enough additional land, not necessarily contiguous to the original entry, to make 160 acres.

TIMBER AND STONE LAND.

The object and purpose of the Timber and Stone Act is the disposal of land chiefly valuable for timber or stone, but unfit for cultivation. Such land

CHEYENNE MOTHER AND PAPOOSE.

may be sold to citizens of the United States in quantities not exceeding 160 acres to any one person or association of persons, at the minimum price of $2.50 an acre, and must be unreserved, unappropriated and uninhabited. Speculation in these claims is prohibited and the entryman must swear that the entry is made for his own sole use and benefit, without agreement or contract with any other person whatsoever.

REMARKS.

Aside from mineral claims, which are not here considered, these are the three general methods by which title may be obtained to public lands. The use of scrip, while not entirely discontinued, is rapidly becoming a thing of the past, and will soon, no doubt, be done away. The issues of scrip are of various kinds, made valuable from the fact that they may be used for location in any state containing public lands and entitled the locator to an immediate patent. They are generally sold by speculators at prices ranging up to $40 an acre.

HOMESTEADING ON RECLAMATION TRACTS.

To obtain a homestead on any of the various tracts of land to be reclaimed under the National Irrigation Act requires compliance with the General Homestead Laws, but the commutation clause is entirely abrogated. In other words, five years' actual residence, cultivation and improvement is rigidly enforced in all cases. To make final proof there must be at least one-eighth of the total irrigable area of the entry actually reclaimed. And all charges apportioned against the tract must be paid to the Government before the patent can be obtained.

The price of land is fixed at $4.00 an acre, and in addition thereto the actual pro rata cost per acre for constructing the necessary works, canals and reservoirs. This added cost is, of course, problematical only, being estimated by the engineers in charge. From present data it will in no case make a total cost of less than $26.00 an acre. Whatever the amount may be, it must be paid in ten annual installments, and failure to make two or more payments will forfeit the entryman's rights and the entry will be cancelled.

The number of acres which a person may secure is not more than 160, nor less, under the present rulings, than 40 acres. There seems to be some disposition to make the minimum as low as twenty acres, in order that a larger number of people may avail themselves of this opportunity to secure a home under this great government enterprise. Under the provisions of the law the Secretary of the Interior may fix the extent of any homestead between these two extremes.

Provision is also made for reservation by the government of land for a right of way for ditches or canals necessary for proper irrigation of the tract, and should any entry embrace a tract of land which is needed for a canal, dam site, or reservoir, the land will be taken for such purpose, the Government maintaining that the entryman has no claim against the United States for taking such right of way.

Under all other conditions that may arise, homesteading on any tract reclaimed by the Government will be governed exclusively by the General Homestead Laws.

In the establishment of large private irrigation enterprises upon Government land that is not appropriated, but which is desired to be reclaimed before being homesteaded and settled upon, the method of procedure is governed by an Act passed May 11, 1898, entitled "An Act to Amend an Act to Permit

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VIEW OF BOZEMAN.

the Use of the Right of Way Through Public Lands for Tramroads, Canals, and Reservoirs, and for Other Purposes." A copy of this, with the accompanying rules and regulations may be obtained at any United States Land Office.

Permits are to be obtained from the Secretary of the Interior for the right of way over land not within the limits of park, forest, military or Indian reservation to the extent of the ground occupied by the water of the canal, and fifty feet on each side of the marginal limits thereof, and are granted to any citizen or association of citizens of the United States, for the purpose of furnishing water for domestic, public, and other beneficial uses. The act is evidently designed to encourage the much needed work of constructing ditches, canals, and reservoirs for irrigation in the arid portions of the country by granting right of way over the public lands necessary to the maintenance and use of the same. The control of the flow and use of the water, and the matter of obtaining the water rights are exclusively within the jurisdiction of the state in which the canal is located, and must be obtained in conformity with those laws. The act is not in the nature of a grant of lands, but it is a base or qualfied fee giving the possession and right of use of the land for the purposes contemplated by the law, a reversionary interest remaining in the United States to be conveyed by them to the person by whom the land may be settled upon and patented, whose rights will be subject to those of the grantee of the right of way.

All persons settling upon a tract of public land, to part of which right of way for a canal or reservoir has attached, take the same subject to such right of way, and at the full area of the subdivision entered, there being no authority to make deduction in such cases.

If a settler has a valid claim to land, existing at the time of the filing of the map of definite location by the canal company, his right is superior and he is entitled to reasonable damages.

From this it will be seen that a person or corporation may proceed under permit to reclaim public land by constructing a canal or reservoir, and then offer water rights from such canal for sale to homestead settlers. The law for homesteading is not changed on this class of lands in the least, but there must be an additional and personal contract between the settler and the owners of the canal for the purchase of water or a perpetual water right.

DESERT LAND.

The purpose of the Desert Land Act is the reclamation of land by conducting water upon the same, and its operations are limited to such land as will not, without artificial irrigation, produce some agricultural crop. The rules of the General Land Office prescribe

First—Lands bordering upon lakes, streams or other natural bodies of of water, or through or upon which there is any river, stream, arroyo, lake, pond, body of water, or living spring, are not subject to entry under the desert land law until the clearest proof of their desert character is furnished.

Second—Lands which produce native grasses sufficient in quantity, if unfed by grazing animals, to make an ordinary crop of hay in usual seasons, are not desert lands.

Third—Lands which will produce an agricultural crop of any kind in amount to make the cultivation reasonably remunerative are not desert.

Fourth—Lands containing sufficient moisture to produce a natural growth of trees are not to be classed as desert lands.

From the foregoing it will readily be seen that under the law the land which may be acquired must be really barren waste, and practically valueless without water. Privilege to make entry of desert land is conferred upon citizens of the United States or those who have declared their intentions to become such, who are residents of the state in which the land sought is located. No more than 320 acres may be taken and this must be in as compact form as may be, taken in relation to the topography of the country and the prior appropriation of adjacent lands.

The party making the entry is required at the time of filing the declaration to file also a map of the land, which shall exhibit a plan showing the mode of contemplated irrigation, and which plan shall be sufficient to thoroughly irrigate and reclaim said land and prepare it to raise ordinary agricultural crops, and shall also show the source of the water to be used for this purpose. The locator must expend in improvements not less than $3.00 an acre, $1.00 an acre each year for three years, and shall file proof thereof during each year. At the expiration of the third year he must file a map or plan showing the character and extent of improvements. Final proof may be made at any time after filing and within a period of four years, by making satisfactory proof of the reclamation and cultivation of the land and paying in full therefor at the rate of $1.25 an acre.

The law requires a personal knowledge by the entryman of the lands to be entered; the affidavit cannot be made by an agent nor upon information and belief. Upon filing the application the sum of 25 cents an acre must be paid to the receiver, and on final proof and payment a certificate will be issued.

Persons making desert land entries must acquire a clear right to the use of sufficient water for the purpose of irrigating the whole tract, and of keeping it permanently irrigated. A person who makes a desert land entry before he has secured a water right does so at his own risk, and as one entry exhausts his right of entry, such right cannot be restored or again exercised because of failure to obtain water to irrigate the land selected by him.

The source and volume of the water supply, how acquired, and how maintained, the carrying capacity of the ditches, and the number and length of all ditches on each legal subdivision of the land must be specifically shown, and when final proof is offered the whole tract must be actually irrigated. The law does not require residence on a desert land entry.

MANNER OF ACQUIRING TOWN SITES ON PUBLIC LANDS.

There are three methods by which title may be acquired to public lands for townsite purposes under the United States Revised Statutes.

First—Section 2380 authorizes the President to reserve public lands for townsite purposes on the shores of harbors, at the junction of rivers, important portages, or any natural or prospective centers of population. Section

2381 provides for the survey of such reservations into urban or suburban lots, the appraisement of the same, and the sale thereof at public outcry: the lots remaining unsold are thereafter to be disposed of at public sale or private entry, at not less than the appraised value thereof.

Second—Sections 2382, 2383, 2384, 2385 and 2386, Revised Statutes, limit the extent of the area of the city or town which may be entered under said acts to 640 acres, to be laid off in lots which, after filing in the General Land Office the statement, transcripts, and testimony required by Section 2383, are to be offered at public sale to the highest bidder at a minimum of $10 for each lot.

An actual settler upon any one lot may preempt that lot and any additional lot upon which he may have substantial improvements at said minimum at any time before the day of sale. Such person must furnish preemption proof showing residence and improvement upon the original lot and improvement upon the additional lot after publication of the usual notice.

Lots not disposed of at time of public sale are thereafter subject to private entry at such minimum, or at such reasonable price as the Secretary of the Interior may order from time to time, after at least three months' notice, as the municipal property may increase or decrease in value. The preliminaries required by this method are:

(1.) Parties having founded or who desire to found a city or town on the public lands under the above sections, must file with the recorder of the county in which the land is situated a plat thereof, describing the exterior boundaries according to the lines of public surveys where such have been made.

(2.) Such plat must state the name of the city or town, exhibit the streets, squares, blocks, lots and alleys, and specify the size of the same, with measurements and area of each municipal subdivision, the lots in which shall not exceed 4,200 square feet, with a statement of the extent and general character of the improvements.

(3.) The plat and statement must be verified by the oath of the party acting for and in behalf of the occupants and inhabitants of the town or city.

(4.) Within one month after filing the plat with the county recorder, a verified copy of said plat and statement must be sent to the General Land Office, accompanied by the testimony of two witnesses that such town or city has been established in good faith.

(5.) Where the city or town is within the limits of an organized land district a similar map and statement must be filed with register and receiver. The exterior boundary lines of the town, if upon land over which the government surveys have not been extended, may, when such surveys are so extended, be adjusted according to those lines where it can be done without impairing vested rights.

(6.) In case the parties interested shall fail or refuse within twelve days after founding a city or town, to file in the General Land Office a transcript map with the statement and testimony called for by Section 2382, the Secretary of the Interior may cause a survey and plat to be made of said city or

town, and thereafter the lots will be sold at an increase of 50 per cent on the minimum price of $10 per lot.

(7.) When lots vary in size from the limitations fixed (4,200 square feet), and the lots, buildings, and improvements cover an area greater than 640 acres, such variance as to size of lots or excess in area will prove no bar to entry, but the price of lots may be increased correspondingly.

(8.) Title to be acquired to town lots embracing mineral entries is subject to recognized possession and necessary use for mining purposes.

A GOVERNMENT SURVEYORS' CAMP.

Third—Land actually settled upon and occupied as a townsite and, therefore, not subject to entry as agricultural land, may be entered as a townsite in accordance with the provisions of Sections 2387, 2388 and 2389, United States Revised Statutes.

(1.) If the town is incorporated the entry may be made by the corporate authorities thereof through the mayor or other principal officer duly authorized to do so.

(2.) If the town is not incorporated the entry may be made by the judge of the county court for the county in which the land is situated.

(3.) In either case the entry must be made in trust for the use and benefit of the occupants thereof according to their respective interests.

(4.) The execution of such trust as to the disposal of lots and the proceeds of sales is to be conducted under regulations prescribed by state or territorial laws, otherwise the actions are void.

(5.) Private individuals or organizations are not authorized to enter townsites under this act, nor can entries be made of prospective townsites. The town must be actually established and the entry must be for the benefit of the actual inhabitants thereof.

(6.) The amount of land that may be entered is proportionate to the number of inhabitants. One hundred and less than two hundred inhabitants may enter not to exceed 320 acres; two hundred and less than one thousand may enter not to exceed 640 acres; and where the inhabitants number one thousand and over, an amount not to exceed 1,280 acres may be entered; and for each additional one thousand inhabitants, not to exceed five thousand in all, a further amount of 320 acres may be allowed.

(7.) The land must be paid for at the government price per acre, and proof must be furnished relating—(a) to municipal occupation of the land; (b) number of inhabitants; (c) extent and value of town improvements; (d) date when land was first used for townsite purposes; (e) official character and authority of the officer making entry; and (f) if an incorporated town proof of incorporation.

(8.) Thirty days' publication of notice of making proof must be made.

(9.) Title cannot be acquired under this act to mines of gold, silver, cinnabar or copper, nor to any valid mining claim or possesson, and a non-mineral affidavit is required.

ENTRIES FOR CEMETERY AND PARK PURPOSES.

Incorporated cities and towns have the right to make one entry of contiguous tracts of unreserved and unappropriated public land not exceeding a quarter section in area for cemetery or park purposes, all of which must lie within three miles of the corporate limits. The land must be paid for at the Government price per acre, and proof must be furnished that it is vacant and unappropriated by any other party, and as to whether it is mineral in character or located within an organized mining district. No mineral land can be so acquired.

LOCATING A MINERAL CLAIM.

In opening this chapter it may not be out of place to say that the government of the United States does not concern itself with mining lands or the mining industry after it parts with the title. This title vests in the patentee absolutely to the extent of the property granted. No royalties are reserved, nor is any governmental supervision attempted. Upon the issuance of the deed by the Government the mineral land becomes private property subject to the same rules as other property in the state with reference to the transfer, devolution by descent, and all other incidents of private ownership prescribed by the laws of the state. The federal law remains, of course, as a monument of title; but beyond that it has no potential force. Its pur-

pose has been accomplished and, like a private vender, the Government loses all dominion over the thing granted. The state may not increase, diminish nor impair the rights conveyed by a federal patent, but may, of course, exercise its police powers and regulate the manner of working the mines. Briefly stated, property in mines once vested in the individual becomes subject to the same rules of law as other real property within the state.

On March 3, 1849, Congress passed an Act creating the Department of the Interior, and thereupon supervision and control of all mineral lands was transferred to the General Land Office in that department.

The Act of July 26, 1866, gave free license to all citizens and those who have declared their intentions to become such, to search for the precious and economic minerals in the public domain. To say that this right applies to mineral lands only and that mineral lands alone can be occupied and enjoyed under the mineral laws, states the fact broadly.

But what are mineral lands? What is the test of the character of a given tract, when its mineral quality is asserted under the mineral laws and that assertion is denied by an agricultural claimant to the same tract?

No legislative interpretation or definition of the term "mineral lands" which were reserved by the Government, has ever been attempted. In all contests between agricultural and mineral claimants prior to final entry; in all applications to enter land under mining laws, and in administering the various grants to railroads, and lands remaining unpatented, the General Land Office is the sole judge of the character of the land and the final arbiter of this subject.

Lands containing the following substances have been held by the land department to fall within the designation of mineral lands, and as such to be subject to entry under the mining laws: Asphaltum, petroleum, borax, nitrate and carbonate of soda, sulphur and alum, kaolin or china clay, mica, umber, gypsum, limestone, marble, diamonds, clay, phosphates, building stone, slate for roofing purposes, cement (gypsum), guano.

In ordinary cases, and without a special ruling by the land department, the mineral character of the land is established when it is shown to have upon or within it such a substance as (a) is recognized as mineral, according to its chemical composition, by the standard authorities upon the subject; (b) is classified as a mineral product in trade or commerce; or (c) such a substance (other than the mere surface which may be used for agricultural purposes) as possesses economic value for use in trade, manufacture, the sciences, or in the mechanical or ornamental arts; and it is demonstrated that such substance exists therein or thereon in such quantities as render the land more valuable for the purpose of removing and marketing the substance than for any other purpose, and the removing and marketing of which will yield a profit; or it is established that such substance exists in the lands in such quantities as would justify a prudent man in expending labor and capital in the effort to obtain it.

The land department thus states its conclusions: "Whatever is recognized as mineral by the standard authorities on the subject, whether of metallic or other substances, when the same is found in the public lands in quan-

tity and quality to render the land more valuable on account thereof than for agricultural purposes, should be treated as coming within the purview of the mining laws."

No general systematic classification of the public lands according to their mineral or non mineral character, for the purpose of sale or other disposal, has ever been attempted. What was known as the "Mineral Land Commission," operating in this State some years ago, was concerned solely in determining the character of the lands embraced in the Northern Pacific Railway Grant, and had no connection with public lands.

Extensive geological surveys have been and are now being made in various parts of the United States, but the results obtained perform no function in the public land system, are not noted in the tract books of the different land offices, and are not necessarily considered in determining the mineral or non-mineral character of the land embraced within the limits of the geological survey.

The general system of land surveys is conducted under the immediate supervision of the United States Surveyors General, the actual surveys in the field being made by deputies or by contract. By these, field notes are made showing location of coal banks or beds, peat or turf grounds, minerals and ores, with particular description of the same as to quality and extent, and all "diggings" therefor; also, salt springs and licks, together with a general description of the township in the aggregate, as respects the face of the country, its soil and geological features, timber, minerals, water and the like. These field notes, when properly approved, taken in connection with the township plats protracted in the office, constitute what is known as the surveyor general's return.

The lands embraced in the survey are treated prima facie as being of the character shown by this return, and are said thenceforth to be borne on the official records as agricultural, timber, or mineral lands, according to the facts developed by the return. If lands are noted on the plat as mineral, no entry thereof will be permitted except under the mining laws.

This return, however, may be overcome by showing the actual character of the land by contest. Indications of mineral do not demonstrate that there is a valuable deposit. A mere location certificate is not in itself evidence of the mineral character of the land, and will not be sufficient to overcome the return. But when a legal mineral location has been made (which, of course, must be based upon a sufficient discovery), the slight presumption in favor of the return is overcome and the burden of proof shifts to the party attacking the mineral claim. The allowance of a mineral entry of a tract, as a matter of course, overcomes a return as agricultural. The character of a given tract of land is always a question of fact to be determined, generally speaking, by the land department on hearings ordered for that purpose, or at the time patent is applied for, and the decision of the department, culminating in the issuance of a patent, is final.. The mineral character of a given tract of land having been ascertained as a present fact, it becomes necessary to determine the status of the land as to title and possession before any legal

right of appropriation under the mining laws can be asserted and maintained by the mineral claimant.

Only public mineral lands can be entered under the mining laws. Land to which any claim or right of others has legally attached does not fall within the definition of "public land." Under the interpretation of the law by the land department and by a decision of the Supreme Court it is held: "That under the Homestead Act the land entered continues to be the property of the United States for five years following the entry, and until a patent is issued," and, therefore, such homestead may be entered upon as a mineral location at any time prior to the issuance of the certificate by the receiver of the United States Land Office.

An agricultural entry covering land that is mineral in character, with the knowledge of prior mineral locations thereon, and of the fact that the land was at such time regarded by many in the vicinity as valuable for the mineral therein, must be cancelled as having been allowed for "known" mineral land.

The same principles of law in this respect, apply to timber and stone entries as to incohate homestead entries. The judgment of the department, culminating in the issuance of the final receipt or certificate, is final and conclusive as to the character of the land, and no subsequent discovery of mineral can affect the title of the purchaser. This is a universal rule governing all classes of entries on the public domain.

Mineral lands cannot be selected or covered with any class of scrip. Nor can mineral lands be acquired under the Desert Land Act.

A scrip entry, whether void or valid, segregates the land from the public domain, and appropriates it to private use, so that no legal entry of it can be made by any one so long as such scrip entry remains uncancelled on the tract books. But this does not necessarily inhibit a mining location from being made on the land if such land was in fact at the time of the scrip entry mineral in character, if such location is made peaceably and in good faith. The mining location would give the locator the status of a claimant such as would enable him to apply for a cancellation of the scrip entry.

The following general rules have been deduced from the laws upon the subject:

(1.) Actual possession of a tract of public mineral land is valid as against a mere intruder, or one having no higher or better right than the prior occupant.

(2.) No mining right or title can be initiated by a violent or forcible invasion of another's actual occupancy.

(3.) If a party goes upon the mineral lands of the United States and either establishes a settlement or works thereon without complying with the requirements of the mining laws, and relies exclusively upon his possession or work, a second party who locates peaceably a mining claim covering any portion of the same ground, and in all respects complies with the mining laws, is entitled to the possession of such mineral ground to the extent of his location as against the prior occupant, who is, from the time the second party has perfected his location and complied with the law, a trespasser.

To lawfully locate and hold a mining claim the locator must be either

FRUIT GROWS PRETTY WELL, TOO.

a citizen of the Unitel States or he must have declared his intention to become such. To entitle an alien to this privilege it must appear that his declared intention to become a citizen is a bona fide existing one at the time of purchase.

Enlistment in the army is a declaration of intention to become a citizen.

As there are no requirements in the general mining laws that the citizen shall be of any particular age, minors born in the United States are citizens and may locate mining claims. Corporations created under the laws of the state are citizens and may also locate mining claims. The constitution of Montana provides that, "aliens and denizens have the same right as citizens to acquire, purchase, possess, enjoy, convey and transmit, and inherit mines and mining property, and milling, reduction concentrating and other works, and real property necessary for or connected with the business of mining and treating ores and minerals."

Mining claims are of two distinct classes: Lode claims and placers. Any person who is qualified as to citizenship may locate, record and hold a mining claim of 1,500 linear feet along the course of any mineral vein or lode subject to location; or an association of persons, severally qualified as above, may make a joint location of such claim of 1,500 feet, but in no case can a location of a vein or lode exceed 1,500 feet along the length thereof, whatever may be the number of persons composing the association.

With regard to the extent of surface ground adjoining a vein or lode and claimed for the convenient working thereof, the statutes provide that in no case shall the lateral extent of locations exceed 300 feet on each side of the middle of the vein at the surface, the end lines of all claims to be in all cases parallel to each other. Said lateral measurements cannot extend beyond 300 feet on either side of the middle of the vein at the surface. For instance, 400 feet cannot be taken on one side and 200 feet on the other. By the foregoing it will be seen that no lode claim can exceed a parallelogram 1,500 feet in length by 600 feet in width. Locators cannot exercise too much care in defining their locations at the outset, inasmuch as the law requires that all records of mining claims shall contain the name or names of the locators, the date of the location, and such a description of the claim or claims located, by reference to some natural object or permanent monument, as will identify the claim.

No lode claim shall be located until after the discovery of a vein or lode within the limits of the claim, the object of this provision being to prevent the appropriation of presumed mineral ground for speculative purposes, to the exclusion of bona fide prospectors, before sufficient work has been done to determine whether a vein or lode actually exists. The claimant should, therefore, prior to locating his claim, unless the vein can be traced on the surface, sink a shaft or run a tunnel or drift to a sufficient depth therein to discover and develop a mineral bearing vein, lode, or crevice; should determine, if possible, the general course of such vein in either direction from the point of discovery by which direction he will be governed in marking the boundaries of his claim upon the surface. His location notice should give the course and distance as nearly as practicable from the discovery shaft on the

claim to some permanent, well-known points or objects such as stone monuments, blazed trees, the confluence of streams, points of intersection of well-known gulches or other prominent features which may be in the immediate vicinity, and which will serve to perpetuate and fix the locus of the claim, and render it susceptible of identification from the description given of it in the record of locations in the district, and should be duly recorded. In addition to the foregoing data, the claimant should state the names of adjoining claims; or, if none adjoin, the relative positions of the nearest claims; should drive a post or erect a monument of stones at each corner of his surface ground; and at the point of discovery, or discovery shaft, should fix a post, stake or board, upon which should be designated the name of the lode, the name or names of the locators, the number of feet claimed, and in which direction from the point of discovery. It is essential that the location notice filed for record, in addition to the above description, should state whether the entire claim of 1,500 feet is taken on one side of the point of discovery or, if on both sides, how many feet there are on each.

Within ninety days of posting the location notice there must be filed in the office of the county clerk of the county in which the claim is situated a declaratory statement containing the same data as the location notice, in addition to the filing made in the United States Land Office, upon regulation blanks, which may be obtained locally.

In order to hold possessory title to a mining claim the locator is required to do, or have done, not less than $100.00 worth of labor, or expend that amount for improvements annually, the first expenditure to be made during the calendar year in which the location was made. Where a number of claims are held in common, the aggregate expenditure that would be necessary to hold all the claims, may be made upon one claim of the group. Proof of compliance with this requirement must be filed with the county clerk and made under oath as are all other filings in mining matters before this officer.

Claims usually called placers, including all forms of deposit, excepting veins of quartz, or other rock in place, shall be subject to entry and patent under like circumstances and conditions as are provided for vein or lode claims.

In placers the unit of location is twenty acres to an individual, with a maximum of 160 acres to an association of persons. In posting the notice, the mode is the same as in quartz claims, except that the number of acres claimed, instead of the length of the lode, must be given, and the equivalent of work required on the lode claim must be performed. The same marking of boundaries is also required.

Full instructions regarding the proceedings of obtaining a patent or title to mineral lands will be furnished on application to any local United States land office.

OPENING INDIAN RESERVATIONS.

The fact that nearly 17,000 people registered for the drawing of lands in the ceded portion of the Crow Indian Reservation, is indicative of the

almost insatiable land hunger of the citizens of the United States, as well as the esteem in which Montana land is held by homeseekers in all parts of the commonwealth. The methods of procedure and the requirements of those participating in this drawing, are now ancient history, and only so much of either as is necessary to familiarize those who desire information to guide them in the opening yet to come, is here set forth. There is no definite information as to even the approximate date of the opening of the Flathead Reservation, but from present indications it is not believed possible that this proclamation will be issued until the summer or fall of 1907, and it may go over to 1908. Inasmuch as the proclamation, regulations and methods of procedure are practically identical in all cases where the lottery plan of disposing of those lands is adopted, and it is reasonable to suppose that this plan will be followed in the opening of the Flathead Reserve, the information given herewith will be valuable for future reference.

It should be understood in the very beginning that farms are to be obtained only under homestead laws of the United States, and in every instance require the locator to make his home upon the land for a period of not less than fourteen months, and that the price is not less than four dollars an acre. Also that every applicant for registration must present himself in person at one of the designated places for registration, excepting only honorably discharged soldiers or sailors who may register by proxy.

The following persons are not entitled to make homestead entry of these lands:

First: Any person who has made a prior homestead entry, and who is not entitled to make a second homestead entry. (The provisions for making second entry are fully given in the chapter on Homesteading in this book.)

Second: A married woman, unless she has been deserted or abandoned by her husband.

Third: One not a citizen of the United States, who has not declared his intention to become such.

Fourth: Anyone under 21 years of age, not the head of a family, unless he served in the Army or Navy of the United States for not less than fourteen days during actual war.

Fifth: Anyone who is the proprietor of more than 160 acres of land in any state or territory.

Sixth: One who has acquired title to, or is claiming under any of the public land laws in pursuance of settlement or entries made since August 30, 1890, an amount of land other than mineral land, which, together with the tract now sought to be entered, will exceed in the aggregatee 320 acres.

Prior to the drawing, reservation is made of school lands, and each Indian is given an allotment by a special commissioner. It is provided also that any portion of the land may be set aside for the purpose of establishing thereon government irrigation works. Further reservation is made of lands subject to the preference right of entry by the purchasers of the improvements of the former Indian claimants thereon and of all timber lands. The balance is open to settlement, entry and disposition under the general provisions of the Homestead, Townsite and Mineral Land laws of the United States, the

date being fixed by the President in a public proclamation. Generally not less than three different towns or cities are named as places of registration, which is conducted by officers and clerks of the General Land Office, and these will furnish blanks to be filled out by the applicant showing himself duly qualified to make homestead entry of these lands. All blanks must be certified by a notary public, and the price for this service is fixed invariably at twenty-five cents each.

No person is permitted to register more than once, or in other than his true name.

Each applicant who shows himself to be duly qualified will be registered and given a non-transferable certificate to that effect, which will entitle him to go upon and examine the lands to be opened; but the only purpose for which he can go upon and examine such lands is that of enabling him later on to understandingly select the lands for which he may make entry. No one will be permitted to make settlement upon any of said lands in advance of the day set for the opening, and during the first sixty days following no one but registered applicants will be permitted to make homestead settlement upon any of said lands, and then only in pursuance of a homestead entry duly allowed by the local land officers, or of a soldier's declaratory statement duly accepted by such officers. The order in which, during the first sixty days following the opening, the registered applicants will be permitted to make homestead entry, will be by a drawing or lottery publicly held at a designated place, commencing at a given date and continuing as long as may be necessary to complete the same, its duration being determined by the speed of the drawing and the number of 160-acre tracts comprising the land to be disposed of.

The drawing will be had under the supervision and immediate observance of a committee of three persons whose integrity is such as to make their control of the drawing a guaranty of fairness. This committee is selected by the Secretary of the Interior and consists of a resident of the state in which the drawing takes place, a resident of the reservation and a representative of the General Land Office.

Preparatory to this drawing the registration officers will, at the time of registering each applicant who shows himself duly qualified, make out a card which must be signed by the applicant and giving such a description of the applicant as will enable the local land officers to identify him. This card will be subsequently sealed in a separate envelope which will bear no other distinguishing label or mark than such as may be necessary to show that it is to go into the drawing.

These envelopes are carefully preserved and remain sealed until opened in the course of the drawing.

When the registration is completed all of these sealed envelopes are brought together at the place of drawing, and turned over to the committee who, in such manner as in their judgment will be attended with entire fairness, shall proceed to draw out and open the separate envelopes and to give each enclosed card a number in the order in which the envelope containing the same is drawn.

The method of drawing is this: All of the envelopes are placed in a large revolving box or wheel and thoroughly shaken up by turning over and over.

Three boys are selected by the committee, who in turn draw from the wheel one of the envelopes. The first one out entitles the person whose name and description is on the enclosed card to the first choice of all the lands opened for settlement; the next one out is entitled to second choice and so on until the drawing is completed.

Notice of the drawing and the name and number of the winner is posted each day at the drawing, and each successful applicant is notified of his number and the day upon which he must make his entry by a postal card mailed to him at the address given by him at the time of registration. The result of each day's drawing is also given to the press as a matter of news.

Upon a date fixed by the proclamation the application of those persons drawing numbers 1 to 125, inclusive, must be presented to the local land office also designated by the proclamation to handle the declarations of homesteading. In case of the Flathead opening this will, without doubt, be the Missoula land office. Applications Nos. 1 to 125 will be considered in their numerical order the first day, and the applications of those drawing numbers 126 to 250 inclusive, must be presented and will be considered in their numerical order during the second day, and so on at that rate until all of said lands subject to entry under the Homestead law, and desired thereunder, have been entered.

If any applicant fails to appear and present his application for entry when the number assigned to him by the drawing is reached, his right to enter will be passed until after the other applications assigned for that day have been disposed of, when he will be given another opportunity to make entry, failing in which he will be deemed to have abandoned his right to make entry under such drawing.

To obtain the allowance of a homestead entry, each applicant must personally present the certificate of registration theretofore issued to him, together with a regular application and the necessary accompanying proofs, together with the land office fees, $16 for a 160-acre tract, but an honorably discharged soldier or sailor may file his declaratory statement through his agent, who can represent but one soldier or sailor as in the matter of registration.

Persons who make homestead entry for any of the ceded lands will be required to pay four dollars an acre payment in all cases to be made as follows:

One dollar an acre at the time of entry, and the remainder to be paid in four equal annual installments; the first installment to be paid at the end of the second year. The total initial expense connected with the transaction is thus $176.25. In case any entryman fails to make the payment as provided for, or any of them, promptly when due, all rights in and to the lands covered by his or her entry shall at once cease, and any payments theretofore made shall be forfeited and the entry shall be held for cancellation and cancelled, the land becoming again open to entry upon the former terms.

Lands entered under the townsite and mineral land laws shall be paid for in amount and manner as provided by said laws but in no case at a less price than that fixed for such lands if entered under the homestead laws, viz., $4.00 an acre.

The production of the certificate of registration will be dispensed with only upon satisfactory proof of its loss or destruction.

If at the time of considering his regular application for entry it appears that the applicant is disqualified from making homestead entry of these lands, his application will be rejected, notwithstanding his prior registration. If any applicant shall register more than once, or in any other than his true name, or shall transfer his registration certificate, he will thereby lose all the benefits of the registration and drawing, and will be precluded from entering or settling upon any of the said lands during the first sixty days following the opening.

Any person or persons desiring to found, or to suggest establishing, a townsite upon any of the said lands, at any point, may, at any time before the opening of the reservation, file in the land office a written application to that effect, describing by legal subdivisions the land to be affected, and stating fully and under oath the necessity or propriety of founding or establishing a town at that point.

This petition will be forwarded to the Commissioner of the General Land Office by the local officers with their recommendations in the premises. Such commissioner, if he believes the public interests will be subserved thereby, will if the Secretary of the Interior approve thereof, issue an order withdrawing the lands described in such petition or any portion thereof, from homestead entry or settlement, and directing that the same be held for the time being, for disposal under the townsite laws of the United States, in such manner as the Secretary of the Interior may from time to time direct; and, if at any time after such withdrawal has been made, it is determined that the lands so withdrawn are not needed for townsite purposes they may be released from such withdrawal and then disposed of under the general provisions of the Homestead law.

All persons are especially admonished that no person will be permitted to settle upon, occupy, or enter any ceded lands, except in the manner provided for in the President's proclamation, until after the expiration of sixty days from the time when the same are opened to settlement and entry, and the lands are not subject to mineral exploration or location during that period. After the expiration of sixty days, but not before, any of said lands which are non-mineral, remaining undisposed of, may be settled upon, occupied and entered under the general provisions of the homestead and townsite laws, and such lands as are mineral will then be subject to the provisions of the mining laws.

The Secretary of the Interior provides all needful rules and regulations in addition to the foregoing, as are suggested by local and other conditions governing the drawing.

Due notice of the date of beginning registration, the names of the cities where registration offices will be located, and the date of opening the reserva-

tion will be published in the newspapers, through a proclamation by the President of the United States. All advance statements regarding any and all of these matters are mere speculation.

According to the figures of the Miles City United States land office, 323 filings were made on the reservation lands as the result of the drawing, out of the total registration of more than 16,000.

When the registration requirement had expired, 55 additional claims were filed upon some rich lands that were over-looked in the rush of the first days of settlement. This makes a total of 378 homestead settlers upon this enormous tract of land.

It should be understood that the ceded portion of this reservation is now open for settlement to any citizen of the United States, upon the same terms of occupation and cultivation as other government land, except that the price of land is $4.00 an acre.

SOME OF THE PRODUCTS OF MONTANA'S FORESTS.

STATE LANDS.

The business of this department of the state government consists in the administration of a vast estate comprising at the present time 3,181,036 acres of land, which has come into the possession of the State through the Enabling Act, and various land grants which have been made by Congress from time to time for the support of state and eleemosynary institutions.

General supervision of its affairs is conducted by the State Board of Land Commissioners, which consists of the Governor, Secretary of State, Attorney General and the Superintendent of Public Instruction, while the executive work is in charge of the State Land Agent and the Register of the State Land Office.

The latter position was created by the Legislature Mrach 7, 1895, to supplement the work of the State Land Agent, whose labors, of course, began with the admission of the State. Upon the creation of the new position of Register, the duties of the office were divided, the State Land Agent devoting his entire time to the selection of lands and making estimates of timber, while the Register assumed charge of the clerical work in the office.

The minimum price fixed by law at which any state land may be sold is $10 an acre, but as by far the larger part of the selections and grants are of such a character that they will not bring this price without further development, they are leased to individuals and livestock companies for grazing purposes.

The acreage now under control of the Land Board will be very largely increased when the survey of the state has been fully extended. The grant for school purposes alone, made by the Enabling Act, includes sections 16 and 36 in each township, making a total of 5,414,400 acres in the State. To this must be added the special grants to state institutions, aggregating 668,080 acres, a grand total of 6,082,480 acres. Congressional grants for special purposes to state buildings and institutions are in acres:

Capitol Building	182,000
Agricultural College	140,000
School of Mines	100,000
Normal School	100,000
Reform School	50,000
School for the Deaf and Blind	50,000
State University	46,080

In character, the land in these special grants is classified as agricultural, 85,000 acres; grazing, 327,467 acres; timber, 255,613 acres. The latter area contains approximately 1,250,000,000 feet of saw timber, while the total estimate of state timber is 3,000,000,000 feet.

Timber is sold to purchasers at a minimum price of $2.50 a thousand, the land remaining the property of the State. Indemnity selections have been

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VIEW OF CHINOOK

made in cases where sections 16 and 36 have been settled upon prior to survey, decided to be mineral in character or has been included in reservations established by the United States Government. All state lands are for sale or lease and all business connected with them must be done with the State Land Office in Helena. There is no general map showing the location of these sections, but they are in large or small tracts, as selections have been made in nearly every county.

Parties desiring to buy or lease should bring to the office a description of the desired tract by metes and bounds, presenting their application to the Register. It must be understood that it is no part of the duty of these officials to direct applicants to any parcel of land. It has now become the established policy of the Board to hold public sales of state land in the vicinity where such lands are located, sales being made to the highest bidder subject to the approval of the Board, and to the fixed minimum price. If land has been appraised by the State Land Agent at more than $10 an acre, it will not be sold at less than the appraised valuation. The terms upon which the lands are sold, as provided by law, are 30 per cent. down, the balance to be paid in 14 equal annual payments, with interest on deferred payments at 5 per cent. per annum, or cash in full. The annual payment system does not apply to sales of timber, which are for cash only. Not more than 160 acres may be sold to one person, except that a larger tract of grazing land may be sold if the disposal of a single 160 acres would be detrimental to the sale of the remainder of the section. All sales and all leases are subject to the approval of the State Board of Land Commissioners.

LEASING OF STATE LANDS.

As not less than 2,500,000 acres of state land holdings are classed as grazing land, for which it is manifestly impossible to secure the minimum price of $10 an acre, a system of leasing has been established through which the otherwise unproductive land is made to yield a revenue.

The number of acres under lease in 1905 was 2,035,731, for which the annual rental was $207,392.91. In 1906 the leased acreage was 1,890,453, and the annual rental was $199,518.42.

The total receipts of the office from all sources since it began operations, including the year 1906 is $3,283,591.33.

Receipts from leases and sales of land and timber during 1905, were $357,790.52, and in 1906, $446,909.09, an increase of $89,118.57.

Leases may be made of any unsold state lands at the rate of six and one-quarter per cent. of its appraised value per acre, rentals to be paid yearly in advance, and the lease to run for five years. Bonds are required from each lessee with two resident and solvent sureties, and full protection is guaranteed for all improvements made upon leased land. Permission is invariably granted upon application to the State Land Board to clear and improve the land, secure a water right, and construct irrigating ditches, and such improvements are made a part of the record of the land office, and the Register is restrained from issuing a certificate of purchase or making a new lease to another applicant at the termination of the original lease until the old lessee

is paid the appraised value of the improvements, or has elected to remove them, the latter privilege extending for ninety days after the expiration of the lease, and being universally accorded where the lessee does not desire to re-lease, providing it can be done without damage to the land. Wtih these protections many leasers have taken advantage of natural conditions, developing splendid grain, fruit, and stock farms upon these lands, paying rental to the State instead of to private owners. This is especially true in Flathead, Ravalli, and Gallatin counties, where the aggregate of such farms exceeds 25,000 acres.

Many acres in other portions of the State are irrigated for alfalfa and other forage crops, principally by stock growers, who generally combine a tract of state lands with their private holdings, by which means they are enabled to hold a sufficient amount of land to supply the wants of their stock.

While there can be no doubt that the minimum price fixed by law is exorbitant, when the character of much of the state land is considered, the natural development and increasing demand for land of any description is rapidly enhancing its value, while the system of leasing not only produces necessary revenue, but holds this vast estate intact for the benefit of future generations.

Much of the land now classed as grazing and leased as such, will undoubtedly be reclassed as agricultural land at an increased appraisement, thus either enlarging its rental value, or making it saleable at public auction as the demand for land becomes more insistent.

It is also possible that by some mutual agreement between Montana and the United States Government, a reclamation project may be established under which the State's selections will take on added values.

Communications regarding state lands should be addressed to the Register of the State Land Office, Capitol Building, Helena, Montana.

DRY LAND FARM IN DAWSON COUNTY.

FOREST RESERVES.

Forest reserves are for the purpose of preserving a perpetual supply of timber for home industries, preventing destruction of the forest cover which regulates the flow of streams, and protecting local residents from unfair competition in the use of the forest and range. They are patrolled and protected at Government expense for the benefit of the community and the home builder.

The welfare of every community is dependent upon a cheap and plentiful supply of timber; a forest cover is the most effective means of maintaining a regular stream flow for irrigating and other purposes, and the permancy of the livestock business depends upon the conservative use of the range.

The injury to all persons and industries which results from the destruction of forests by fire and careless use is a matter of history in older countries, and has long been the cause of anxiety and loss in the United States.

The protection of the forest resources still existing is a matter of urgent local and national importance. This is shown by the exhaustion of lumbering centers, often leaving behind desolation, and depression in business; the vast public and private losses through unnecessary forest fires; the increasing use of lumber per capita by a still more rapidly increasing population; the decrease in the summer flow of streams just as they become indispensable to manufacturing or irrigation; and the serious decrease in the carrying capacity of the summer range. These combine to make the forest problem in many ways the most vital internal problem in the United States.

As early as 1799 Congress provided for the purchase of timber lands to supply the needs of the Navy, and in 1817 further legislation directed the setting apart of public lands for the same purpose, and provided penalties for the unauthorized cutting of any public timber. Other acts, from time to time, made similar provisions for setting apart forest land for specific purposes, but the first attempt to secure comprehensive administration of the forests on the public domain was in 1871, by a bill introduced in the Forty-second Congress which failed of passage.

In 1876 $2,000 was appropriated to employ a competent man to investigate timber conditions in the United States, and on June 30, 1906, an act was approved creating a Division of Forestry, in the Department of Agriculture. On July 1, 1901, this division became the Bureau of Forestry (now the Forestry Service, since the Act of March 3, 1905), employing practically all the trained foresters in the United States, and engaged in almost every branch of forest work in every state and territory except the actual administration of the Government forest lands. This remained in the Department of the Interior, which, although possessing complete machinery for the disposal of lands, was provided with neither system nor trained men for conservative

forest management. In the meantime, with the increasing realization that the nation's timber supply must be protected, and with the immense growth of irrigation interests in the West, the necessity for retaining permanent federal control over selected forest areas was recognized by a brief section inserted in the Act of March 3, 1891, which authorized the President to establish forest reserves. The first exercise of this power was in the creation of the Yellowstone Park Timber Land Reserve, proclamed by President Harrison March 30, 1891.

The mere creation of forest reserves, however, without provision for their administration, was both ineffectual and annoying to local interests dependent upon their resources. Consequently the Secretary of the Interior, in 1896, requested the National Academy of Sciences to recommend a national forest policy. This resulted in the passage of the Act of June 4, 1897, under which, with subsequent amendments, forest reserves are now administered.

On the theory that the management of land, not of forests, was chiefly involved, this law gave the Secretary of the Interior authority over the reserves and provided that their surveying, mapping, and general classification should be done by the United States Geological Survey and the execution of administrative work by the General Land Office. But the technical and complex problems arising from the necessary use of forest and range soon demanded the introduction of scientific methods, and a technically trained force, which could not be provided under the existing system.

The advice and services of the Bureau of Forestry were found necessary, but, under the law, could be but imperfectly utilized. The necessity of consolidating the various branches of government forest work became apparent and was urged upon Congress by the President and all the executive officers concerned. Finally, the Act of February 1, 1905, transferred to the Secretary of Agriculture entire jurisdiction over the forest reserves, except in matters of surveying and passage of title. The management of the Forest Service is vested in an administration consisting of sixteen members, with Mr. Gifford Pinchot, of Washington, D. C., as chief, bearing the official title of Forester. These gentlemen supervise the various divisions of the work, which has been highly specialized.

The regulations and instructions here published are in accord with the act last mentioned and the various supplementary and amendatory laws passed since June 4, 1897. They are based upon the following general policy laid down for the Forest Service by the Secretary of Agriculture in his letter to the Forester dated Feb. 1, 1905:

"In the administration of the forest reserves it must be clearly borne in mind that all land is to be devoted to its most productive use for the permanent good of the whole people, and not for the temporary benefit of individuals or companies. All resources of forest reserves are for use, and this use must be brought about in a thoroughly prompt and business-like manner, under such restrictions only as will insure the permanence of these resources. The vital importance of forest reserves to the great industries of the Western States will be largely increased in the near future by the continued steady advance in settlement and development. The permanence of the resources

of the reserves is, therefore, indispensable to continued prosperity, and the policy of this Department for their protection and use will invariably be guided by this fact, always bearing in mind that the conservative use of these resources in no way conflicts with their permanent value.

"You will see to it that the water, wood, and forage of the reserves are conserved and wisely used for the benefit of the home builder first of all, upon whom depends the best permanent use of lands and resources alike. The continued prosperity of the agricultural, mining, and livestock interests is directly dependent upon a permanent and accessible supply of water, wood and forage, as well as upon the present and future use of these resources under business-like regulations, enforced with promptness, effectiveness, and common sense. In the management of each reserve local questions will be decided upon local grounds; the dominant industry will be considered first, but with as little restriction to minor industries as possible; sudden changes in industrial conditions will be avoided by gradual adjustment after due notice, and where conflicting interests must be reconciled the question will always be decided from the standpoint of the greatest good of the greatest number in the long run."

The administration of forest reserves is not for the benefit of the Government, but of the people. The revenue derived from them goes, not into the general fund of the United States, but 10 per cent of it directly to the counties in which the reserves are situated, and the other 90 per cent toward maintaining upon the reserves a force of men organized to serve the public interests. The money received from the forest reserve fund by the counties is for the use of the public schools and the road fund, but the amount so received must in no case exceed forty per cent of the total income of a county from all other sources. The receipts for the year ending June 30, 1906, were included in this provision and approximately $6,000 will be apportioned among the Montana counties affected.

The employes on the reserve have two chief duties: To protect the reserves against fire, and to assist the people in their use. Forest officers are, therefore, servants of the people. They must answer all inquiries concerning reserve methods fully and cheerfully, and be at least as prompt and courteous in the conduct of reserve business as they would in private business. They must obey instructions and enforce the regulations for the protection of the reserves without fear or favor, and must not allow personal or temporary interests to weigh against the permanent good of the reserves; but it is no less their duty to encourage and assist legitimate enterprises.

They must make every effort to prevent the misunderstanding and violation of reserve regulations by giving information fully and freely. The object should be to prevent mistakes rather than to have to punish them. Information should be given tactfully, by advice, and not by offensive warnings.

The most recent data obtainable shows a total of 114 reserves in the United States, two in Alaska and one in Porto Rico. Of the whole number no less than 18 lie entirely within the boundary lines of Montana, together with

portions of two others. Nine new reserves have been created in the State since August 10, 1906.

The following table shows the reserve, the number of acres it contains, and the name of the Supervisor in all cases where appointments have been made:

Reserve	Area in Acres	Supervisor	Address
Yellowstone*	1,229,680	E. C. Russell	Fairbanks.
Bitter Root**	691,920	E. A. Sherman	Missoula.
Gallatin	888,660	David Conklin	Bozeman.
Lewis and Clark	4,670,720	F. N. Haines	Kalispell.
Madison	958,800	J. B. Seeley	Virginia City.
Little Belt	929,200	Ira E. Todd	Neihart.
Highwood Mountains	45,080	James G. Thain	Highwood.
Elkhorn	186,240	Robert J. Moore	Townsend.
Hell Gate	1,581,120	E. A. Sherman	Missoula.
Big Belt	630,260	Robert J. Moore	Townsend.
Helena	782,160	Dwight Bushnell	Helena.
Long Pine	108,580	J. F. Smith	Deawood, S. D.
Lo Lo	1,066,880	E. A. Sherman	Missoula.
Kootenai	1,509,440	E. C. Russell	Livingston.
Crazy Mountain	250,000		
Missoula	190,720	Elers Koch	Missoula.
Pryor Mountain	201,920		
Snowy Mountain	126,080		
Ekalaka	115,200		
Big Hole	1,410,240		
Total	17,572,900		

* Total of Yellowstone in Wyoming, Montana and Idaho—7,938,560 acres.
** Total of Bitter Root in Idaho and Montana—4,552,880.

In estimating the amount of land withdrawn from settlement by this policy, there must be added about 1,000,000 acres for the Cabinet reserve, not yet created, but now withheld pending investigation which makes the total within a small fraction of one-fifth of the superficial area of the State.

THE BIG BELT RESERVE.

This reserve follows the range of the Big Belt Mountains on the boundary line between Broadwater and Meagher Counties, and extending south into Gallatin. A narrow, but long tract, containing 630,260 acres. Five rangers are employed. Timber on the reserve is estimated to be 160,000,000 feet. Nearly 400 permits for 96,172 head of livestock were issued in 1906, of which 14,979 were cattle, 2,685 were horses, and 78,498 were sheep. The prices, which are uniform throughout Montana, are: Horses 25 cents a head; sheep, 6 cents a head, and cattle 12½ cents a head for 60 head or less; all over 60 head, 25 cents.

THE BITTER ROOT RESERVE.

This is one of the great reserves of the United States, containing in all 4,552,880 acres, the greater part of which is in Idaho. The Montana division extends along the western boundary line of the State from Missoula south to the state line and contains 691,920 acres. Roughly estimated there are 1,000,000,000 feet of yellow pine; 100,000,000 feet of red fir, and 1,000,000,000 feet of lodge pole pine on this division. The regular force of rangers and fire guards consists of five men.

During the season of 1906 permits for grazing 329 head of cattle, 32 horses, and 14,631 sheep were issued, bringing a total revenue of $914.11.

THE ELKHORN RESERVE.

This is a small reserve consisting of 186,240 acres in north-central Jefferson County. Two rangers are employed, and the timber estimate is 140,000,000 feet.. In 1906 permits for grazing 4,870 cattle. 630 horses and 5,000 sheep were issued.

THE GALLATIN RESERVE.

Located in the eastern part of Madison and the northern part of Gallatin Counties this reserve contains 888,660 acres, with 337,300,000 feet of merchantable timber, and employes nine men in its care. It is especially adapted for grazing, over 20,000 head of stock being permitted to occupy it during 1906, the total income from this source being $4,364.28. These consisted of 9,945 cattle, 1,437 horses, 8,633 sheep and 10 goats.

THE HELL GATE RESERVE.

The Hell Gate Reserve contains 1,581,120 acres, the largest but one in the State. It occupys the territory lying south from Missoula, to Silver Bow and Beaverhead Counties, taking in the Bitter Root slope on the east side of that valley. The estimate of timber on various slopes of the tract are given, with the number of acres, and kind of timber upon each.

Estimate of Timber in Hell Gate Forest Reserve.

BITTER ROOT SLOPE.

Area of commercial timber, 376,685 acres.

	Feet.	
Yellow pine	311,348,000	
Red fir	160,674,000	
Tamarack	75,337,000	
Lodgepole	959,381,000	
		1,506,740,000

HELL GATE SLOPE.

Area of commercial timber, 19,456 acres.

	Feet.	
Yellow pine	14,592,000	
Red fir	5,838,600	
Tamarack	2,918,400	
Lodgepole	35,037,000	
		58,386,000

ROCK CREEK SLOPE.

Area of commercial timber, 343,195 acres.

	Feet.	
Yellow pine	120,117,500	
Red fir	120,117,500	
Lodgepole	960,940,000	
		1,201,175,000

FLINT CREEK SLOPE.

Area of commercial timber, 123,466 acres.

	Feet.	
Yellow pine	18,519,000	
Rer fir	92,499,000	
Lodgepole	259,379,500	
		370,397,500

DEER LODGE SLOPE.

Area of commercial timber, 110,210 acres.

	Feet.	
Red fir	55,105,000	
Lodgepole	220,420,000	
		275,525,000
		3,412,223,500

This is also a favorite grazing reserve, as the report shows. Permits in 1906 were issued for 15,599 cattle, 9,950 sheep, 1,480 horses, and 1,340 goats, with a total revenue of $4,973.95.

THE HIGHWOOD RESERVE.

With only 45,080 acres this is the smallest of all the Montana reserves, having 13,520 acres in Cascade and 31,560 acres in Chouteau counties, with a continuous boundary line 55 miles in length. It includes the following named mountain peaks with their altitudes: Highwood Peak, 7,604 feet. Arrow Peak, 7,420 feet, and South End, 7,013 feet in height. The Highwood is more of a grazing than a timber reserve, although considerable small timber of the lodge pole variety may be found toward the head of the Highwood valley, and on the southwest portion of the reservation at the head of Little Belt Creek; but no sawmill could long thrive in these mountains on account of the poor quality and small dimensions of the timber. The streams are largely grown up to cottonwoods, with a scattering of fir timber here and there, one particularly fine stand of the latter being on the head of Davis Creek on the east side of the reserve. A crowded stand of poles and saplings covers about one-fourth of the entire reserve area, which, with a heavy undergrowth makes a magnificent forest cover, conserving the mountain snow far into the summer months and in this manner regulating the flow of the streams and keeping them normal that they may be utilized to their utmost for irrigation and other purposes.

On the greater reserves a ranger is expected to patrol from three to five townships, whereas on the Highwood, consisting of barely two townships, the officer in charge acts as guard, ranger and supervisor, looking after the grazing of horses, cattle and sheep, timber sales and free use cases, and attending to the manifold duties devolving upon a forest reserve officer. In emergency cases an assistant may be employed at $2 a day. Fifty-five hundred head of horses and cattle and 6,000 sheep were permitted to graze on this reserve during the season of 1906, the first named for a term of five and a half months commencing May 16, the latter for three and a half months opening June 15, the returns amounting to $1,300. No estimate of timber was returned, as it is not merchantable.

THE LEWIS AND CLARK RESERVE.

California is the only state in the Union having a reserve larger than the Lewis and Clark lying within its borders, and there is only one other, having divisions in three states, that exceeds it in area. It extends from the Canadian line, having absorbed the old Flathead reserve, southward, embracing parts of Flathead, Teton, Missoula, Deer Lodge and Lewis and Clark counties, with a total of 4,670,720 acres. This enormous tract is estimated to carry 5,500,000,000 feet of merchantable timber, and employs a total of 37 men in its care.

For administration purposes it is divided into two parts. The northern division contains approximately 1,500,000 acres and a conservative estimate gives the merchantable timber as 2,500,000,000 feet. This is exclusive of pole and fuel timber, of which there is an enormous quantity. Twelve men are employed besides the supervisor.

On the 3,170,720 acres of the southern division there is estimated to be about 3,000,000,000 feet of saw timber and 27 men are employed.

Grazing permits were issued during 1906 for 9,262 cattle, 4,302 at 12 1-2 cents a head, and 4,960 at 25 cents; 475 horses. Income from this source was $1,869.50.

THE LITTLE BELT RESERVE.

This is one of the smaller reserves, situated in the northern part of Meagher county, and contains 583,560 acres, classified as follows Forested, 237,810 acres; wooded, 25,140 acres, and the balance as non-timbered, a large portion of which is described as badly burned. It is hoped that this latter tract may be reforested, which will greatly increase the timbered portion of the reserve. The main range of the Little Belt Mountains occupies the southern and a small part of the northern and central portion of the reserve, which conserves the headwaters of the Judith and Musselshell rivers. It embraces a well known mining region, including the silver mines of Neihart and Barker, and the famous Yogo sapphire mines. The lands either occupied or suitable for agricultural purposes aggregate 12,000 acres, but not over 1,000 acres are actually under cultivation. Nearly all these lands are so situated as to requide irrigation. The grazing area is approximately 125,000 acres. Mill timber is estimated to be 241,950,000 feet, and pole and fuel timber at 411,810,000 cubic feet. Of the former 44.7 per cent is red fir, 34.2 per cent lodge pole pine; and the balance is made up of Engelmann spruce, limber pine, subalpine fir and some yellow pine. Seven men are employed in caring for this reserve besides the supervisor.

Grazing permits were issued for 7,975 head of cattle, 507 horses, and 39,968 sheep, but the total receipts are not reported.

THE MADISON RESERVE.

The Madison Reserve occupies nearly one third of the entire area of the county of Madison, or 958,800 acres. Of the total area included within the reserve 776.140 acres, or 81 per cent, is naturally forest land on which the estimated timber stand is 970,000,000 board feet.

Notwithstanding this large percentage of forest area, the reserve affords

range for the greatest number of livestock of any reported. Two hundred and thirty permits, covering a total number of 19,385 cattle and horses and eighteen permits for 82,365 sheep, were issued for the season of 1906, bringing a cash revenue of $9,788.15. Eight men were employed during most of the year, the force being reduced to six for about four months. The annual cost of administration is $7,200.

THE YELLOWSTONE RESERVE.

The Yellowstone has the distinction of being the largest of all the reserves in the United States. It has a total area in Wyoming, Idaho and Montana of 7,988,560 acres, of which 1,229,680 acres are in the latter State, located in the southern portion of Park, Sweetgrass and Carbon counties, along the State boundary line. The stand of saw timber on the Montana portion, which is called the Absoraka Division, is estimated at 972,680,000 feet, with 952,555,000 cubic feet of fuel and pole timber.

An interesting feature of the administration of this reserve has been the experiments conducted regarding the use of lodge pole pine for railroad ties, something which it is believed has never before been attempted. As a result of these investigations a contract has been let to a Montana mill man to cut 52,000,000 feet of this class of timber for ties. The price for stumpage is $2.25 a thousand feet. The number of men employed in caring for the reserve is 10, and the total of livestock for which grazing permits were issued in 1906 was 25,000. Of this number 13,000 were cattle and horses and 12,000 were sheep, the revenue being $3,970. It is also interesting to note that there have been practically no forest fires since the organization of the reserve over three years ago, although before that time fires were of frequent occurrence. In addition to the timber cutting contract mentioned above, sales of a large amount of mining timbers have been negotiated.

THE HELENA RESERVE.

The Helena Reserve was created in April, 1906, and contains 782,160 acres, embracing a tract 80 miles long and about 35 miles wide. It extends from Gould in the central portion of Lewis and Clark county, on the north, to Rochester, Madison county, on the south, and takes in the main range of the Rocky Mountains and many off-shooting spurs within these two extremes. It takes in the wooded portion of Mount Helena, the entire Rimini section, and just misses Marysville, Bald Butte and Gould, passes immediately to the east of Ophir and Elliston, and follows the range of mountains from the latter point to the eastward of the city of Deer Lodge and along the hills to the north of Silver Bow Creek, passing to the north of Butte; it then circles round to the east of Butte, taking in the Elk Park section of the continental divide, and follows the range to the east and south of Butte, again to the westward to the Big Hole basin country and then south to Rochester; returning northward and eastward it takes in the east slope of the range above described, proceeding nearly to Whitehall and thence northerly and northwesterly up the west side of the Jefferson valley, just missing Boulder and Basin and so on to Mount Helena. Of this vast territory there is in commercial forest 245,255 acres and in non-commercial 171,632 acres, while

140,166 acres has been cut over. The estimate of saw timber is 499,622,000 feet, and of cordwood 4,996,220 cords. No figures are given of the livestock on this reserve on account of its recent creation.

In addition to the other work of the forest officers it is proposed to establish nurseries and propagate native and other trees for reforesting Mount Helena and other parts of the reserve.

This work will be watched with much interest, as all of the seedlings planted in the spring of 1906 failed to survive.

Four sites for nurseries were selected in October, 1906, where the work of training forest rangers in the planting and care of young trees will be conducted. Twenty thousand trees will be put out on these sites, all of which are in the Gallatin reserve.

THE CRAZY MOUNTAIN RESERVE.

This is a new reserve established by proclamation on Aug. 10, 1906, and takes its name from the mountain range which it covers. The mountains themselves are named for their ragged contours and peculiar profiles. They rise to a height of 11,178 feet above sea level and 5,000 feet above the surrounding foothills. Their heavy snowfall is of the utmost importance to three river systems—the Yellowstone, the Musselshell, and the Missouri, through Sixteen Mile Creek. It embraces parts of Park, Meagher and Sweetgrass counties, and contains approximately 250,000 acres.

Topograhpically, the Crazy Mountains may be divided into two sections, of which the southern is without doubt the roughest in the State. Here the streams, inclosed in deep canyons, take their rise in the melting snow of high peaks of slide rock. The northern range is less forbidding, the ridges being quite generally covered with grass. The mountains have a much different climate record from the surrounding lowlands. Fresh snow has been seen on the crests of the Crazy Mountains in August, while from October to June snow may be seen there at any time. Snowdrifts at the head of some of the creeks, when seen even in mid-July, show no signs of ever having been completely melted. Rock Creek has even a small glacier at its head.

The forest is typical of the lodge pole pine forest of the Rockies, and that species grows in pure stand over three-tenths of the timbered area of the reserve. Red fir covers two-tenths in pure stand, and the remaining five-tenths is a mixture of the two species with the lodge pole pine predominating.

In scattered growth there is some lumber pine, balsam fir, Englemann spruce, juniper, with the usual cottonwood and willow in the creek bottoms. Of the two main types the lodge pole pine will average about 4,000 feet to the acre, and the fir about 6,000 feet.

Six small sawmills are now operating in the territory which has been included within the reserve, but their operations are not extensive.

The section is chiefly important for grazing industry, many sheepman being permanently established on railroad land which they have bought. Perhaps 100,000 head of sheep are ranged here, together with 5,000 cattle and horses and 1,100 goats. To thoroughly systematize this industry will be the great problem which will devolve upon the forest officers.

THE KOOTENAI RESERVE.

This reserve was created on August 13, 1906, and originally contained 887,360 acres, but by a proclamation issued on Nov. 25, 1906, an additional reservation of 27 townships was made, so that the total acreage is now 1,509,440. It occupies the extreme northwest corner of the State in Flathead county, the northern and western boundaries being the Canadian and Idaho lines respectively. This is a natural forest region, and nearly the entire reserve is covered with timber, or, having been denuded, is capable of reforestation. The nature of the soil and climatic conditions render it of little value for agriculture. Its highest altitude is along the international boundary line, where it ranges from 2,500 to 7,000 feet.

Nearly all the timber within the reserve is at present inaccessible, except that on bottom lands and bench lands that border directly upon the Kootenai river, and is therefore of no commercial value. The region is in every way more suited to forestry than to any other purpose. It is admirably adapted for the conservation of moisture, and is an important factor in maintaining the perpetual flow of certain navigable streams. All of the rivers draining through this region flow directly into the Kootenai, one of the most important tributaries of the Columbia, which constitutes one of the great arteries of western commerce. The Kootenai has also been utilized for the navigation of steamboats for many years both in the United States and Canada.

THE LO LO RESERVE.

The proclamation creating this reserve was issued on September 29, 1906. It consists of a number of strips of land from five to twenty miles wide and ninety miles long, lying wholly along the eastern slope of the Bitter Root Mountains in Missoula county. It has for its boundaries the Missoula and St. Regis rivers on the north and northeast, the Bitter Root valley on the east, the Bitter Root Forest Reserve and the Montana-Idaho line on the south, southwest and west. The country is mountainous, the State line following the summit of the divide between the Snake and Columbia rivers, and elevations range from 2,000 to 9,000 feet. The climate is rigorous, and there is snow on the highest mountains through all but four months in the year. Except for a narrow strip adjoining the Bitter Root valley, the region is without foothills, the former having nearly all the merchantable timber. The lodge pole type is a pure stand between 5,000 and 7,000 feet elevations, and the alpine type occurs above 7,000 feet where slope and soil will permit. The lower slope has valuable stands of yellow pine, red fir, tamarack, white pine and cedar.

The lodge pole pine has been burned repeatedly, so that it is practically destroyed in all save a few favored situations, and the burned-over forest land, almost half the total area of the reserve, is within this type. The alpine is bunchy and scrubby and has value only for slope protection and, perhaps, remotely in the future, for fuel.

The prevention of fire on the reserve, for a time at least, will be the main aim of its administration. The important industries of the region are lumbering and mining. At present the actual logging operations are lim-

ited, but the possibilities are great, and while there are extensive placer operations, quartz mining is still in the prospect stage.

The Coeur d'Alene branch of the Northern Pacific railroad follows the St. Regis valley just north of the reserve, and affords a means of transportation east and west for all timber that may be cut. Agricultural lands are almost entirely lacking except on the main lower valleys, but in a few places bottom lands are made to produce hay, grain and a few hardy vegetables. Stock is limited to comparatively few horses and cattle. The reserve is not suited for sheep grazing. In the original proclamation approximately 800,000 acres were withdrawn, but on Nov. 25, 1906, forty-nine townships were added, making the total area of the Lo Lo Reserve 1,066,880 acres.

THE LONG PINE RESERVE.

By proclamation this reserve, containing 108,580 acres, was created Oct. 1, 1906. It is located in the southeastern part of the State, north of the Little Missouri river, the eastern boundary line being the Montana-South Dakota line, while its southern boundary is about 38 miles north of Wyoming. The grazing is excellent, as the range has been but slightly overstocked, and as the cattle are all owned by residents there are no conflicting interests.

THE EKALAKA RESERVE.

This new reserve was created Nov. 5, 1906, and is located to the north and east of the Long Pine in the same vicinity. It contains approximately five townships or 115,200 acres. These two reserves contain some fine agricultural lands, besides having practically the only timber supply in this part of the State. The importance of preserving this may readily be seen when it is known that settlers come as great a distance as 75 miles to secure timber products from the Long Pine and Ekalaka reserves.

THE BIG HOLE RESERVE.

Lying in the extreme southwestern part of the State, this reserve, with the Bitter Root and the Lo Lo, makes an unbroken chain of reserves along the western border of the State for many miles. It was created Nov. 5, 1906, and contains 1,410,240 acres. The principal object to be conserved is the protection of the headwaters of streams having their source on the continental divide. The rich agricultural valleys of the region are not included in the reserve, but it is estimated that at least 100,000 acres of cultivated land depend upon the reserved area for their water supply. While the timber supply is excellent, the surrounding country is mainly dependent upon stock-raising, and the management of the reserve will be devoted principally to a regulation of grazing privileges.

THE SNOWY MOUNTAIN RESERVE.

The Snowy Mountain Reserve takes its name from the range of mountains in Fergus County upon which it is located. It was created on Nov. 5, 1906, and contains about 126,080 acres. Practically all the timber growth on the south side of the mountains has been destroyed by fire, and the efforts of those in charge will be directed mainly to reforestation of these denuded areas and the prevention of similar occurrences.

THE MISSOULA RESERVE.

The purpose of this reserve, which lies north and east of the city of Missoula, is the conservation of the headwaters of Rattlesnake Creek, from which the city obtains its water supply. The growth of Missoula and the consequent increase in the use of water seems to render this action imperative. The stream is fed from a number of lakes and water sheds, and the destruction of timber by fire or otherwise seriously affects the volume of water. The country consists mainly of high rugged mountains, well timbered, and there is little agricultural land outside the Rattlesnake valley, nearly all of which has been cultivated for many years; 190,720 acres are embraced in the reserve, which was created on Nov. 6, 1906.

THE PRYOR MOUNTAIN RESERVE.

This reserve embraces that part of Carbon county lying south of the boundary line of the Crow Indian Reservation and east of the Big Horn river, comprising about 201,920 acres. The land is unsurveyed and there is little opportunity for either grazing or agriculture, but the slopes of the Pryor Mountains with their heavy forest are conservative of the steady flow of Sage Creek and other headwaters of the Big Horn river, which are a large factor in the supply for government reclamation projects to the east and north of the reserve.

THE CABINET RESERVE.

In January 1906, more than 1,000,000 acres of land was withdrawn from settlement for the purpose of creating the Cabinet Forest Reserve, but this action aroused so much opposition from citizens of Flathead and Sanders counties that action was delayed pending investigation by the Washington authorities. The proposed reserve embraces 50 per cent of the new county of Sanders, beginning at the west line of the Flathead Indian reservation and covering all the land north of the Northern Pacific railway from a point near Plains to the Idaho line. This withdrawal, in connection with others, also left Flathead county with but 1,890 square miles of unreserved area out of a total of 9,250 square miles of land in the entire county. Without doubt there are more good farming lands within the boundaries of the proposed Cabinet reserve than are to be found in any other reserve in the State. It is the opinion of representative citizens of both Sanders and Flathead counties that this reserve should not be created.

SUMMARY.

Within the past two years the land included within forest reserve boundaries in the United States has increased from less than 50,000,000 to more than 100,000,000 acres. The chief objections raised against this policy were, first, that this vast area, as large as all the New England and middle states with Maryland and Virginia thrown in, took away from opportunity for agricultural settlement and home-building large tracts of land valuable for such purposes, and second, that many counties in which reserves lie have much—in some instances more than half or two-thirds—of their entire area withdrawn from the possibility of private ownership and consequent taxation.

Both these objections have now been partially met, the first by allowing homesteading under certain restrictions fully described elsewhere in this book, and the second by allowing ten per cent of all money received from forest reserves to the counties in which such reserves are situated for the benefit of the school or road fund of such counties.

The proceeds from forest reserves during the fiscal year ending June 30, 1904, were $58,436.10. During the next fiscal year they were $73,276.15.

The transfer of the forest reserves to the forest service was made February 1 of that year, and during the five months remaining the forest service was busy reorganizing and formulating plans for the work. The result is notable. During the year ending June 30, 1906, the receipts were $767,219.66, more than a ten fold increase over the previous year.

In the distribution of ten per cent of this amount Montana was entitled to $5,869.04.

The total of merchantable timber estimated for the reserve area of Montana is 14,333,776,000 feet board measure. This does not include the Kootenai, Crazy Mountain, Lo Lo or Long Pine reserves, upon which no figures are yet obtainable. As both the Kootenai and Lo Lo reserves are in a heavily forested district, their quota will add largely to the above figures.

HOMESTEADING ON FOREST RESERVES.

The bill permitting homesteading on certain lands within the boundaries of forest reserves became a law on June 11, 1906. So important are the operations under this act to all the people of the State that it is here given in full, together with all the information regarding the subject that it has been possible to obtain:

AGRICULTURAL SETTLEMENT, ACT OF JUNE 11, 1906.

"The Secretary of Agriculture may, in his discretion, and he is hereby authorized, upon application or otherwise, to examine and ascertain as to the location and extent of lands within permanent or temporary forest reserves, which are chiefly valuable for agriculture, and which in his opinion may be developed for agricultural purposes without injury to the forest reserves, and which are not needed for public purposes, and may list and describe the same by metes and bounds, or otherwise, and file the lists and descriptions with the Secretary of the Interior with the request that the said lands be opened to entry in accordance with the provisions of the Homestead law and of his act. Upon the filing of any such list or description the Secretary of the Interior shall declare the said lands open to homestead settlement and entry in tracts not exceeding 160 acres in area, and not exceeding one mile in length, at the expiration of sixty days from the filing of said list in the land office of the district within which the lands are located, during which period the said list or description shall be prominently posted in the land office and advertised for a period of not less than four weeks in one newspaper of general circulation published in the county in which the lands are situated; provided, that any settler actually occupying and in good faith claiming such lands for agricultural purposes prior to January 1st, 1906, and who shall not have abandoned the same, and the person, if qualified to make a

homestead entry, upon whose application the land proposed to be entered was examined and listed, shall, each in the order named, have a preference right of settlement and entry; provided, further, that any entryman desiring to obtain patent to any lands described by metes and bounds entered by him under the provisions of this act shall, within five years after the date of making settlement file, with the required proof of residence and cultivation, a plat and field notes of the lands entered, made by or under the direction of the United States Surveyor General, showing accurately the boundaries of such lands, which shall be distinctly marked by monuments on the ground, and by posting a copy of such plat, together with a notice of the time and place of offering proof, in a conspicuous place on the land embraced in such plat during the period prescribed by law for the publication of his notice of intention to offer proof, and that a copy of such plat and field notes shall also be kept posted in the office of the register of the land office for the district in which such lands are situated for a like period; and, further, that any agricultural land within forest reserves may, at the discretion of the Secretary, be surveyed by metes and bounds, and that no lands entered under the provisions of this act shall be patented under the commutation provisions of the homestead laws, but settlers, upon final proof, shall have credit for the period of their actual residence upon the lands covered by their entries.

"That settlers upon lands chiefly valuable for agriculture within forest reserves on January 1st, 1906, who have already exercised or lost their homestead privilege, but are otherwise competent to enter lands under the Homestead laws, are hereby granted an additional right of homestead entry for the purposes of this act only and such settlers must otherwise comply with the provisions of the homestead law, and in addition thereto must pay two dollars and fifty cents an acre for lands entered under the provisions of this section, such payment to be made at the time of making final proof on such lands. That nothing herein contained shall be held to authorize any future settlement on any lands within forest reserves until such lands have been opened to settlement as provided in this act, or to in any way impair the legal rights of any bona fide homestead settler who has or shall establish residence upon public lands prior to their inclusion within a forest reserve."

By this it will be seen that the commutation clause does not apply, but that settlers must reside upon them for the full five years to the exclusion of a home elsewhere. That lands may not be appropriated and patented under the homestead laws if entrymen use them merely for grazing headquarters during a few weeks or months each year and maintain homes in another place, and that no claims can be initiated for agricultural land in the reserves until it has been classified as chiefly valuable for such purposes, listed in the local land office and opened by the Secretary of the Interior, and finally, that the settler has prior rights over all other claimants even if he does not institute proceedings to have the land listed.

Only one tract of land will be examined on the application of the same person, but if it is rejected or withdrawn, a second application will be considered for other land.

Areas known to have been occupied by actual settlers prior to January

homestead entry, upon whose application the land proposed to be entered was examined and listed, shall, each in the order named, have a preference right of settlement and entry; provided, further, that any entryman desiring to obtain patent to any lands described by metes and bounds entered by him under the provisions of this act shall, within five years after the date of making settlement file, with the required proof of residence and cultivation, a plat and field notes of the lands entered, made by or under the direction of the United States Surveyor General, showing accurately the boundaries of such lands, which shall be distinctly marked by monuments on the ground, and by posting a copy of such plat, together with a notice of the time and place of offering proof, in a conspicuous place on the land embraced in such plat during the period prescribed by law for the publication of his notice of intention to offer proof, and that a copy of such plat and field notes shall also be kept posted in the office of the register of the land office for the district in which such lands are situated for a like period; and, further, that any agricultural land within forest reserves may, at the discretion of the Secretary, be surveyed by metes and bounds, and that no lands entered under the provisions of this act shall be patented under the commutation provisions of the homestead laws, but settlers, upon final proof, shall have credit for the period of their actual residence upon the lands covered by their entries.

"That settlers upon lands chiefly valuable for agriculture within forest reserves on January 1st, 1906, who have already exercised or lost their homestead privilege, but are otherwise competent to enter lands under the Homestead laws, are hereby granted an additional right of homestead entry for the purposes of this act only and such settlers must otherwise comply with the provisions of the homestead law, and in addition thereto must pay two dollars and fifty cents an acre for lands entered under the provisions of this section, such payment to be made at the time of making final proof on such lands. That nothing herein contained shall be held to authorize any future settlement on any lands within forest reserves until such lands have been opened to settlement as provided in this act, or to in any way impair the legal rights of any bona fide homestead settler who has or shall establish residence upon public lands prior to their inclusion within a forest reserve."

By this it will be seen that the commutation clause does not apply, but that settlers must reside upon them for the full five years to the exclusion of a home elsewhere. That lands may not be appropriated and patented under the homestead laws if entrymen use them merely for grazing headquarters during a few weeks or months each year and maintain homes in another place, and that no claims can be initiated for agricultural land in the reserves until it has been classified as chiefly valuable for such purposes, listed in the local land office and opened by the Secretary of the Interior, and finally, that the settler has prior rights over all other claimants even if he does not institute proceedings to have the land listed.

Only one tract of land will be examined on the application of the same person, but if it is rejected or withdrawn, a second application will be considered for other land.

Areas known to have been occupied by actual settlers prior to January

VIEW OF GLASGOW

1, 1906, will be examined first, and when such araes are found to be chiefly valuable for agriculture they will be listed in order that the occupants may make entry under the act. The mere fact that a person has settled upon land will not influence the decision with respect to its agricultural character. Settlers must not expect to include valuable timber land in their entries. Settlement made after January 1, 1906, and in advance of opening by the Secretary of the Interior, is not authorized, will confer no rights, and will be trespass. Settlement and entry under the act will be within the jurisdiction of the Secretary of the Interior and the Commissioner of the General Land Office has issued the following rules governing the entry of such lands:

First—Both surveyed and unsurveyed lands within forest reserves which are chiefly valuable for agriculture and not needed for public use may, from time to time, be examined, classified and listed under the supervision of the secretary of agriculture, and lists thereof will be filed by him with the secretary of the interior, who will then declare the listed lands subject to settlement and entry.

Second—And person desiring to enter any unlisted lands of this character should present an application for their examination, classification and listing to "The Forester, Washington, D. C.," in the manner prescribed by regulations issued by the agricultural department.

Third—When any lands have been declared subject to entry under this act the land office for the district in which they are located will be furnished with a list thereof, and the register and receiver will immediately, upon receipt of such list, file it in their office, and at the same time issue notices of such filing and name therein the sixty-first day after the day on which the list is filed by them as the date on which the lands listed therein will be open to settlement and entry under the homestead laws.

Fourth—The notice mentioned in the preceding paragraph should be substantially in the form of the notice hereto attached, and you will keep a copy of the notice of the filing of each list prominently posted in your office during the sixty days following such filing, and also publish a copy of the notice during that period for not less than four weeks in a newspaper of general circulation published in each county in which any of the lands are located, and if there be no newspaper published in such county you will publish the notice in a newspaper of general circulation published nearest the land.

Fifth—The cost of publishing the notice mentioned in the preceding paragraph will not be paid by the receiver, but the publisher's vouchers therefor, in duplicate, should be forwarded through your office to this office, accompanied by a duly executed proof of publication.

Sixth—In addition to the publication and posting, above provided for, you will, on the day the list is filed in your office, mail a copy of the notice to any person known by you to be calming a preferred right of entry as a settler on any of the lands described therein, and also at the same time mail a copy of the notice to the person on whose application the lands embraced in the list were examined and listed and advise each of them of their preferred right to make entry prior to the expiration of sixty days from the date upon which the list is filled.

Seventh—Any person qualified to make a homestead entry who, prior to January 1, 1906, occupied and in good faith claimed any lands listed under this act for agricultural purposes. and who has not abandoned the same, has a preferred right to enter such contiguous tracts covered by his settlement as will not exceed 160 acres in area and not exceed one mile in length, at any time within sixty days from the date upon which the list of such lands was filed in your office.

Eighth—The fact that a settler named in the preceding paragraph has already exercised or lost his homestead right will not prevent him from making entry of the lands settled upon if he is otherwise qualified to make entry, but he cannot obtain

patent until he has complied with all of the requirements of the homestead law as to residence and cultivation and paid $2.50 per acre for the land entered by him.

Ninth—The person upon whose application any land is listed under this act has, if he is qualified to make entry under the homestead laws, the preferred right to enter such contiguous tracts listed upon his application as will not exceed 160 acres in area and not exceed one mile in length, at any time within sixty days from the date on which the list embracing such lands was filed in your office, but his entry will be made subject to the right of any settler on such lands who makes entry within sixty days from the filing of the list in your office.

Tenth—When an entry embraces unsurveyed lands, or embraces a tract which forms a fractional part of a quarter section (forty acres), or embraces a fractional part of a lotted subdivision of a surveyed section, the entryman must cause such unsurveyed lands of such fractional parts to be surveyed by or under the direction of the United States surveyor-general at some time before he applies to make final proof; but when all of any platted subdivision of a surveyed section is embraced in his entry he will not be required to resurvey such technical legal subdivision.

Eleventh—The commutation provisions of the homestead laws do not apply to entries made under this act, but all entrymen must make final proof of residence and cultivation within the time, in the manner and under the notice prescribed by the general provisions of the homestead laws, except that all entrymen who are required by the preceding paragraph to have their lands, or any portion of them, surveyed must within five years from the date of their settlement present to the register and receiver their application to make final proof on all of the lands embraced in their entries, with a certified copy of the plat and field notes of their survey attached thereto.

Twelfth—In all cases where a survey of any portion of the lands embraced in an entry made under this act is required the register will, in addition to publishing and posting the usual final proof notices, keep a copy of the final proof with a copy of the field notes and the plat of such survey attached posted in his office during the period of publication, and the entryman must keep a copy of the final proof notice and a copy of the plat of his survey prominently posted on the lands platted for at least thirty days prior to the day on which he offers his final proof, and at the same time his final proof is offered he must file an affidavit showing the date on which the copies of the notice and plat were posted on the land and that they remained so posted for at least thirty days thereafter.

Thirteenth—This act does not apply to any lands situated in the counties of Inyo, Tulare, Kern, San Luis Obispo, Santa Barbara, Ventura, Los Angeles, San Bernardino, Orange, Riverside and San Diego, in the state of California, and entries made for lands in the Black Hills forest reserve can only be made under the terms and upon the conditions prescribed in sections 3 and 4 of this act.

Fourteenth—This act does not authorize any settlements within forest reserves except upon lands which have been listed and then only in the manner mentioned above, and all persons who attempt to make any unauthorized settlement within such reserves will be considered trespassers and treated accordingly.

As an earnest of the position the Department intends to maintain upon this matter, these statements by the Forester will prove intereresting:

"The burden of proof in the case of an application for timber land within a forest reserve under the act will be entirely upon the applicant. I can justly assume that all forest reserve land is more valuable for forest than for agricultural uses, and that land covered with a growth of merchantable timber is chiefly valuable for forest purposes. If these assumptions are of value separately, they have four-fold weight when combined. They must stand unless disproved by the applicant.

"The present stand of timber is of fundamental importance in establishing the value of land for forest reserve purposes, but has nothing whatever to do with its worth for agricultural purposes. Therefore, the applicant will not be allowed to offset the sale value of timber upon the land applied for against the cost of removing it, and clearing the ground of stumps and roots.

"Thus the fundamental question in considering timber land applied for as agricultural is whether it will pay to clear the land and prepare it for cultivation after all merchantable timber has been removed. Therefore, I would not hesitate to sell, if opportunity offered, from land applied for as agricultural, and mark for cutting as in all other sales in forest reserves, all mature and large growth of timber before listing it with the Secretary of the Interior for opening. There are two reasons for this:

"First—The Homestead law does not anticipate giving any other bonus to settlers than the right to improve and cultivate the homestead tract in a manner consistent with its agricultural nature. This is so true that a prosecution for trespass lies against a homestead settler who cuts timber upon his claim for other than its direct development.

"Second—If it should be that an applicant really coveted the timber upon the land and is not willing to clear it after the timber is removed, the previous sale of merchantable timber, under forest reserve rules and regulations and in a way to secure the reproduction of the forest, will have a doubly beneficial effect. It will prevent the land from being taken up for the timber, and it will keep the land in condition to fulfill its purpose as timber land.

"The President and the Secretary are both keenly alive to the value of home building, and in recommending and helping out the passage of the agricultural settlement bill the forest service has proved beyond a doubt that it desires all land within forest reserves to be put to its best use, whether such use involves clearing away the forest cover or not."

Whether this law and its administration will result in allaying in any appreciable degree the objections to the entire policy of forest reserves cannot now be told. It is certain, however, that there exists a widespread dissatisfaction with present methods of administration, which, combined with that occasioned by the establishment of reserves to such an extent as to retard development, besides depriving old settlers of well defined and long established privileges, is certain to evoke a powerful protest against what are believed to be invasions of the rights of pioneers and others.

There is no disposition in any quarter to deny the justice of the general principles upon which the reserves are founded. It is rather the manner in which they are created and managed that is criticised. First, it is claimed, and justly, that so long as each reserve is created solely upon proclamation of the President, is it entirely possible, and has been the case, that the executive may be imposed upon and unwittingly take action that is absolutely unjust. In all the reserves that have been created in Montana, it is not known that there has ever been any consultation with officials or residents of the State. It would seem that in a matter of such vital importance touching

the future development of perhaps one seventh of the total area of the State, the people of the commonwealth affected might at least be consulted and the benefit of their judgment sought.

Then, in the management of the reserves, it is submitted that this should be made the subject of definite and succinct legislation and no longer left to the whim and caprice of officials, no matter how great their position or ability. For be it known that so far as the administration of the reserves is concerned, there is absolutely not a word of law upon the matter. It is all accomplished by rules and regulations issued from the Forestry Service, the General Land Office, or the Department of the Interior.

Here again it is proper and just that the people most directly interested should have some voice. As it is now, those who have spent many years in the regions now included within the reserves are not only ignored by the creative power, but hampered and annoyed in countless ways by apparently senseless rules and dictums of men who never saw the tract and who are wholly unfamiliar with its needs, possibilities or requirements. Such a system is not productive of the best results, nor conducive to the perpetuation of the policy which is the foundation of the whole project. It is believed that these and perhaps other objections will be the subject of a joint memorial to Congress from the Legislature of Montana and other interested States, and that some remedial action may be looked for.

MINING.

Mining claims in forest reserves may be freely sought for, located, developed and patented in accordance with the mineral land laws and forest reserve regulations. The administration of these laws is under the jurisdiction of the Secretary of the Interior.

The discovery of a mere trace of mineral is not sufficient to make a claim valid, unless both the character of the mineral and the manner of its occurrence are such as to warrant expenditure for development and reasonable expectation of a valuable discovery. In entries of placer mining claims by associations, if any subdivision is not mineral, and this fact is shown, it will be eliminated from the entry before patent.

Any recognized mineral substance, if found in sufficient quantity, will warrant entry under the mineral laws—for example, building stone, china or fire clay, coal, limestone, oil, salt, or slate, but not brick clay, sand or gravel.

TOWNSITES.

Land in forest reserves embraced in valid townsite settlements made before the establishment of the reserve may, unless abandoned, be entered and patented under the townsite laws without regard to the length of time which has elapsed after their settlement or after the establishment of the reserve. If a petition addressed to the Forester and an examination made under his direction show that it is necessary and advisable to use forest reserve land for townsite purposes, an executive order to exclude the land may be issued, in which case provision will be made for its entry under the laws and regulations of the Department of the Interior.

LIEU SELECTION.

No right now exists to exchange private holdings within forest reserves for lands elsewhere except when such right was established before March 3, 1905, and except the indemnity-selection right for school sections 16 and 36.

JURISDICTION.

The authority to grant special privileges and rights of way within forest reserves is divided as follows:

1. Applications for permission to occupy or use lands, resources or products of a forest reserve, which occupation or use is temporary in character and which, if allowed, will in no wise affect the fee or cloud the title of the United States, are under the jurisdiction of the Secretary of Agriculture.

2. All applications affecting lands within a forest reserve, the granting of which amounts to an easement running with the land, are within the jurisdiction of the Secretary of the Interior.

All privileges within forest reserves, except for timber or grazing, are "special privileges," and the following are the most usual ones and must be applied for through the forest supervisors:

Class One.

(a) Trails and wagon roads.

(b) Schools and churches.

(c) Hotels, stores, mills, stage stations, apiaries, miners' camps, stables, summer residences, sanitariums, dairies, trapper's cabins and the like.

(d) Pastures, drift fences, corrals, and agricultural land.

(e) Canals, ditches, flumes, pipe lines, tunnels, dams, tanks, and reservoirs, within forest reserves, when no easement of the land occupied is required.

(f) Steamboats and ferries.

(g) Aerial tramways and wire-rope conveyors.

(h) Private railroads, tram roads, telegraph, telephone, or electric power lines and the plants or buildings necessary for their use, when no easement of the land occupied is required.

(i) The purchase of sand, clay, gravel, hay and other products.

(j) Other similar privileges which do not amount to a disposal of the land.

Class Two.

These are granted by the Secretary of the Interior, and must be applied for through the local land office and never through the forest officers.

(a) Rights of way to use water for municipal or mining purposes.

(b) Rights of way for irrigation purposes.

(c) Rights of way for railroads.

Permits for the use of the forest reserves, unless otherwise specifically fixed by regulation, may be granted by the Forester for any term consistent with forest reserve interests. If, however, land covered by any permit is excluded from a reserve, the permit then expires. The Forester may also make a reasonable charge for any permit, right, or privilege.

Permits are not assignable, and abandonment in favor of another necessitates new application and permit. In case of abandonment and new permit the original permittee may sell his improvements to the new permittee, and any payments made by him may apply on the new permit.

The Special Fiscal Agent, Washington, D. C., is authorized to receive all payments to the Forest Service. Forest officers are prohibited from receiving any payments. Payments must be by postal or express money orders or national bank drafts on New York City, and must be accompanied by printed form letters of transmission, which will be furnished by the forest officers, and be in duplicate.

The Forester may demand and approve such bonds, require such stipulations, and approve and execute such leases and other contracts as are required or permitted by law.

The Secretary of Agriculture may allow or refuse the free use of forest reserve timber by bona fide settlers, miners, residents, and prospectors, for firewood, fencing, building, mining, prospecting, and other domestic purposes.

It may also be granted to school and road districts, churches, and cooperative organizations of settlers desiring to construct roads, ditches, reservoirs, or other similar improvements for mutual or public benefit, but it will be refused to sawmill proprietors, owners of large establishments or commercial enterprises, and companies and corporations.

The free use privilege will not be given to any trespasser.

No free use material may be taken without a permit. Application for a permit may be made verbally or in writing to any officer authorized to grant it. If it receives his approval, he will see that the applicant understands the regulations governing the privilege, and will fix the amount, kind, and location of the material and the terms under which it must be taken.

The privilege of free use must never be granted verbally.

Timber granted under a free use permit may be cut by an agent or may be sawed by a local sawmill, but the work so done must not be paid for by a share of the material. All timber on forest reserves which can be cut safely and for which there is actual need, is for sale. Green timber may be sold except where its removal makes a second crop doubtful, reduces the timber supply below the point of safety, or injures the streams. All dead timber is for sale.

The prime object of the forest reserves is use. While the forest and its dependent interests must be made permanent and safe by preventing overcutting or injury to young growth, every reasonable effort will be made to satisfy legitimate demands.

Timber cut from forest reserves may be handled and shipped like any other timber, except that it will not be sold for shipment from regions where local consumption requires the entire supply, or is certain to do so in the future. There is no limit to the amount which may be sold to one purchaser except that a monopoly of the supply will not be tolerated. The time allowed for the removal of the timber will depend upon the amount purchased, but speculation by holding for a rise in value will not be permitted.

In all cases the first step for the prospective purchaser is to consult the

nearest forest officer. Inquiries or applications should never be sent to Washington direct. Twenty dollars worth of dead timber may be sold directly by any forest supervisor, or ranger, without any delay. One hundred dollars' worth of dead or living timber may be sold by any forest officer, but the forest supervisor must approve the sale. The only delay involved is the time required for making an estimate and report.

Sales of more than $100 must always be advertised for bids. The supervisor may require that a deposit shall be made before examination of or report on any application to purchase timber.

The period allowed for the removal of the timber, which in no case will exceed five years must be fixed in the agreement.

Violation of the following four rules constitutes trespass:

(a) No timber may be cut or removed until it is paid for.

(b) No timber may be removed until it has been scaled and stamped by a forest officer.

(c) Timber may be cut only on the area designated by the officer.

(d) No living trees may be cut until marked or otherwise unmistakably designated by the officer.

When a right of way or other special privilege is granted, the Forester may, without advertisement, fix the price and require payment for all timber cut or destroyed on land occupied in direct connection with the enjoyment of the privilege. Occupancy under permit secures no right or claim against the United States, either to the land or any improvements on it, beyond the privileges conferred by the permit. Improvements made by the permittee, except fences, may not be removed except with the written consent of the supervisor.

The policy of the Forest Service is to prevent applicants from securing and holding valuable privileges as a speculative venture, either awaiting development of the country to make them more valuable, or until financial assistance to carry them out can be secured.

To avoid this speculative feature applicants must, before permit is issued, make all required payments and agree that any necessary construction work will commence within some definitely stated reasonable time, that the work will be completed within a certain period, and that the privilege will be beneficially enjoyed for at least a certain stated period each year.

Hotels, stores, mills, apiaries, limekilns, residences and similar establishments will be permitted wherever the demand is legitimate and consistent with reserve interests.

The use of tracts of not to exceed two acres for a school and one acre for a church is specifically provided by law, and timber for the construction of church and school buildings may also be secured under the free use regulation.

Permits to enclose and cultivate agricultural land may be granted by the Forester, but not in tracts exceeding 160 acres to any one individual, or may be opened to homestead settlement as fully described in the chapter devoted to that subject in this book.

Wagon roads and trails may be constructed, and the use of $100 worth of timber is allowed for such purpose, under special permit.

The supervisor may grant a permit for a small water project, such as a reservoir covering not to exceed ten acres, or a ditch, flume, pipe line not to exceed two miles in length to supply a few farms, or a tank to collect water for stock, provided not more than $100 worth of timber will be cut or destroyed on the right of way. Permits for larger projects must be obtained from the Secretary of Agriculture.

None of these permits, however, carry any right to the water itself, but are only for the necessary improvements.

Permits for private railroads and tram roads, and telegraph, telephone and power transmission lines may be granted by the Forester only.

Wild grass may be cut for hay under permit, at reasonable charge per acre.

All persons are prohibited from appropriating, excavating, injuring, or destroying any historic or prehistoric ruin or monument, or any object of antiquity on lands owned or controlled by the United States under penalty of a fine of $500, or imprisonment for 90 days, or both.

GRAZING.

The Secretary of Agriculture has authority to permit, regulate, or prohibit grazing in the forest reserves. Under his direction the Forest Service will allow the use of the forage crop as fully as the proper care and protection of the forests and the water supply will admit. In new reserves, where the livestock industry is of special importance, full grazing privileges will be granted at first, and if a reduction in number is afterwards found necessary, stockmen will be given ample opportunity to adjust their business to the new conditions.

Every effort will be made to assist the stock owners to a satisfactory distribution of stock on the range in order to secure greater harmony among citizens, to reduce the waste of forage by tramping in unnecessary movement of stock, and to obtain a more permanent, judicious, and profitable use of the range. All persons must secure permits before grazing any stock in a forest reserve, except the few head in actual use by prospectors, campers and travelers, and milch or work animals not exceeding a total of six head owned by bona fide settlers residing in or near the reserve, which are excepted and require no permit.

The Secretary of Agriculture will prescribe each year the number of stock to be allowed in each reserve, and the period in which grazing is allowed will be determined by the Forester. The Supervisor will issue permits in accordance with the instructions of the Forester. Applicants for grazing permits will be given preference in the following order:

(a) Small nearby owners.

(b) All other regular occupants of the reserve range.

(c) Owners of transient stock.

The number of stock allowed an applicant will be determined upon the merits of each case.

The owners of stock which belong in the state or territory in which the reserve is located will be given the preference, and resident owners will be considered first, but owners from adjoining states will also be considered when circumstances warrant it.

The Supervisor will set and give public notice of a date each year on or before which all applications for grazing permits must be presented to him, and applications must not cover more stock than the applicant desires to graze in the reserve. They must show the marks and brands of the stock, the portion of the reserve or district in which pasture is desired, and the grazing period. Applications will be divided into two classes—cattle and horses, and sheep and goats.

Whenever there is a dispute between applicants for a permit, the same will be decided by the supervisor after a hearing, subject to an appeal to the Forester within ten days after decision is rendered. A reasonable fee will be charged for grazing all classes of livestock on the reserves. The minimum price will be as follows, depending upon the advantages and locality: From twenty to thirty-five cents a head for cattle and horses for the summer grazing season, and from thirty-five to fifty cents a head for the entire year; from five to eight cents a head for sheep during the summer season, and from eight to ten cents a head for goats during the summer season. An extra charge of two cents a head will be made for sheep or goats which are allowed to enter the reserves for the purpose of lambing or kidding. All stock six months old and over at the time of entering will be counted as grown stock.

Fees are payable each year strictly in advance. When notified that his application is approved, the applicant must remit the amount due for grazing fees to the Special Fiscal Agent, Forest Service, Washington, D. C., within thirty days.

Permits will be granted only for the exclusive use and benefit of the owners of the stock, and will be forfeited if sold or transferred in any manner or for any consideration. Speculation in the use of permits will not be allowed, and permits will be refused or cancelled for intentional false statement of the number of stock owned. New permits will be issued when stock grazing upon a reserve is sold, without cost, for the remainder of the season.

Each person or group of persons granted grazing privileges will be required to repair all damage done to roads or trails caused by the presence of their stock, and to build any new roads or trails found necessary for the proper handling of their stock. They will also be required to fence any spring or seep which is being damaged by tramping, and, if necessary, pipe the water into troughs for watering stock, such troughs to be open for public use.

Sheep must not be bedded more than six nights in succession in the same place, except when bedding bands of ewes during the lambing season, and must not be bedded within 300 yards of any running stream or living spring.

The carcasses of all animals which die in the close vicinity of any water must be immediately removed and buried or burned. All stock grazed under permit must be salted regularly at such places as are designated by the forest

officers, and the owners of stock must notify the forest officers when any such order has been complied with.

All persons holding grazing permits are required to extinguish camp fires started by them or their employes before leaving the vicinity thereof, and to aid in extinguishing all forest fires within the division or district in which they are grazing stock. Permits will be cancelled if orders of the forest officers are not complied with.

Persons who own or have leased from the owners, land within any reserve which they desire to use for grazing purposes, will be allowed to cross the reserve lands with their stock to reach such private holdings, but when the stock will be grazed upon reserve lands en route, they must make application for the privilege of crossing.

All stock which is grazed under permit or allowed to cross any reserve, will be required to conform to the quarantine regulations of the Bureau of Animal Industry, Department of Agriculture, and all livestock laws of the state or territory in which the reserve is located.

The construction and maintenance of drift or division fences will be allowed when they will be a benefit to the reserve or its administration, and will not interfere with the use of the range by all who are equitably entitled to share in the grazing privilege.

All drift or division fences must be provided with gates at such points as are necessary to allow proper ingress and egress.

The construction of corrals upon reserves upon lands covering an area of not more than one acre, to be used in connection with the proper handling of livestock which is permitted to graze thereon, will be allowed under certain conditions.

The construction of enclosures containing not more than 320 acres will be allowed when such enclosures are necessary for the proper handling of stock, as a special privilege, for which an annual rental of not less than four cents an acre will be charged in addition to the regular grazing fee. The fencing up of watering places for the purpose of controlling adjoining ranges, will not be allowed, and in fencing pastures provision must be made to allow free access to water by any stock grazing under permit.

Under this regulation the construction and maintenance of pastures will be allowed for the following purposes:

(a) To pasture saddle horses milch or work animals, graded or thoroughbred breeding stock, and bulls or rams.

(b) To pasture beef steers or stock cattle which are being gathered or held just previous to their removal from the reserve.

(c) To give settlers who live upon lands either within or on the border of the reserve, the exclusive use of adjoining pasture lands during a portion of the year, when needed for protection against other stock.

Whenever any livestock association whose membership includes a majority of the owners of any class of livestock using a forest reserve or portion thereof shall appoint a committee for such purpose, an agreement on the part of which committee shall be binding upon the association, such committee upon application to the Forester, may be recognized as an advisory

board for the association, and shall then be entitled to receive notice of proposed action, and have an opportunity to be heard by the local forest officer in reference to increase or decrease in the number of stock to be allowed for any year, the division of the range between different classes of stock, or their owners, or the adoption of rules to meet local conditions.

Livestock associations desiring to take advantage of this regulation must file an application with the Forester, giving the names of all the members of the association, the name of the reserve or reserves in which its members are interested, and the names of the committeemen, not more than five in number, who are to act for the association. The application must be accompanied by a copy of the constitution and by-laws of the association, and a statement that the action of the board will be binding upon the association.

TRESPASS.

Under authority given to the Secretary of Agriculture, the following acts are forbidden and declared to constitute trespass, punishable by fine and imprisonment:

(a) Grazing upon or driving across a forest reserve any stock without a permit, except as otherwise allowed by regulation.

(b) Placing any fence or enclosure without a permit, except upon patented land, or upon a valid claim when necessary for the actual development of such claim consistent with its character.

(c) Making settlement or squatting upon land within a reserve, except in accordance with the act of June 11, 1906.

(d) Building roads, trails, railways or tramways, and constructing ditches, dams, canals, pipe lines, flumes, tunnels, or reservoirs, without a permit, except upon patented lands or upon a valid claim.

(e) Erecting or conducting telephone, telegraph, or power lines, hotels, stores, sawmills, power plants, or other structures, or manufacturing or business enterprise, or carrying on any kind of work except according to law and reserve regulations, and except upon patented lands or upon a valid claim.

(f) Willfully tearing down or defacing any notices of the Forest Service.

(g) Willfully destroying or damaging any property belonging to or used by the United States for forest reserve purposes.

(h) Willfully setting on fire or causing to be set on fire any timber, brush, or grass, or leaving or suffering fire to burn unattended near any timber or other inflammable material in a forest reserve.

The following trespasses are forbidden by specific acts of Congress, and are punishable by fine and imprisonment:

(a) Cutting, destroying, or removing timber or other forest products without a permit, or without a valid claim to the ground on which such timber or product grows, except in small quantities actually needed by transients while within reserves.

(b) Cutting, destroying, or removing more timber upon an unpatented claim than is necessary for its actual development.

(c) Cutting and removing timber from one mining claim to be used

on another unless such use tends to directly develop the claim from which the timber is removed.

(d) Destroying, defacing, changing, or moving any corner, meander post, monument, or bench mark, or cutting down any blazed line or witness tree on any Government survey.

(e) Chipping, chopping, or boxing trees for turpentine purposes or aiding or encouraging such.

All forest officers have power to arrest without warrant any person whom they discover in the act of violating the reserve laws and regulations, or to secure a warrant from a United States Commissioner, or, if one is not convenient, from a justice of the peace, and use it as the visible sign of the right to arrest, and also to arrest for any such violation on a warrant obtained by any competent person. The United States has all the civil rights and remedies for trespass possessed by private individuals.

When any structure is erected upon reserve land without a permit it becomes the property of the United States immediately upon its construction.

Probably the greatest single benefit derived by the community and the nation from forest reserves is through the protection of property, timber resources, and water supply against fire. The direct annual loss from this source on unprotected lands reaches many millions of dollars; the indirect loss is beyond all estimate.

During 1904, six-tenths of one per cent of a total reserve area of 58,052,054 acres was burned out. In 1905 this as reduced to one-tenth of one per cent of a total reserve area of 92,741,030 acres. The burden of adequate protection against fire cannot well be borne by the State or by its citizens, much as they have to gain, for it requires a great outlay of money to support a trained and equipped force, as well as to provide a fund to meet emergencies. Only the Government can do it, and, since the law does not provide effective protection for the public domain, only in the forest reserves can the Government give the help so urgently needed.

Through its fire patrol the Forest Service undertakes to guard the property of the resident settler and miner and preserve the timber, water, and range upon which the prosperity of all industries depends. The help it can give to the development of the West may be greatly increased by the cooperation of citizens. Destructive forest fires are not often set willfully, but far too commonly they result from failure to realize that carelessness will be followed by injury and distress to others. The resident or traveler in forest regions who takes every precaution not to let fire escape, and who is active in extinguishing fires which he discovers, contributes directly to the development and wealth of the country and to the personal safety and profit of himself and his neighbors. He who does not assumes a great responsibility by endangering not only his own welfare but that of countless others.

Citizens' fire brigades have been organized successfully on many reserves. Not only is the prevention of fire to the interest of all property owners, but men under obligation to fight fire because they hold permits will profit greatly by such prevention, because it reduces the work they may be called upon to do. An organization which will put out a fire before it gathers headway

may save themselves many hard days' work. Care with small fires is the best preventive of large ones.

The following simple regulation may easily be observed by all, and its violation will be treated as trespass.

Camp fires must not be larger than necessary; must not be built in leaves, rotten wood, or other places where they are likely to spread, or against large or hollow logs, where it is difficult to be sure when they are completely out. In windy weather and in dangerous places camp fires must be confined to holes, or by clearing all vegetable matter from the ground around them. A fire must never be left, even for a short absence, before it is completely extinguished

Lumbermen, settlers, miners, prospectors and other persons using the reserves are cautioned against making dangerous slashings, and must not fire them in very dry weather. If it is necessary to burn slashings ample notice must always be given the nearest forest officer.

The act of May 5, 1900, prescribes a maximum fine of $5,000, or two years' imprisonment, or both, for any person convicted of responsibility for the willful setting of a fire on the public domain, or for suffering a fire to burn unattended near any inflammable material. It prescribes a fine of $1,000 or one year's imprisonment, or both, for building a fire and leaving it before it is totally extinguished.

THE FOREST SERVICE.

The permanent field force of the forest reserves now contains the grades of forest inspector, assistant inspector, supervisor and deputy supervisor, forest assistant ranger and deputy ranger, assistant forest ranger and forest guard.

Except in the cases of forest inspector, assistant forest inspector and forest assistant, whose compensation will depend on varying circumstances, pay will be fixed as follows, as fast as the necessary funds are available and the promotions earned:

Forest Supervisor	$1,800 to $2,500.
Deputy Forest Supervisor	$1,500 to $1,700.
Forest Ranger	$1,200 to $1,400.
Deputy Forest Ranger	$1,000.
Assistant Forest Ranger	$ 800 to $ 900.
Forest Guard	$ 600 to $ 720.

These positions are subject to the Civil Service examination and only legal residents between the ages of 21 and 40 are eligible for the ranger or supervisor examinations. Information as to the times and places at which examinations will be held and the steps necessary to secure admission may be obtained only from the United States Civil Service Commission, Washington, D. C.

It is usually by Presidential proclamation that forest reserves are created, revoked, or modified in boundary, although, as a matter of course, Congress may take such action and has done so in a few cases.

The boundaries of the earlier reserves were not always carefully drawn. In 1903 the need of better choice of reserve boundaries led to the establish-

ment of a force of trained men devoted exclusively to this work, under a uniform and complete system of field study and report. The results were satisfactory and the system remains in effect.

Before any new forest reserve is created, or any change is made in the boundaries of an existing reserve, a member of the Forest Service familiar with the work and with western conditions makes a careful investigation, not only of the lands, but also of the interests involved. The claims of all industries and classes of residents are weighed in order that no injustice may be done.

The region is carefully mapped and described, and the boundary of the reserve is drawn to include only suitable reserve land. Possible agricultural areas are always excluded unless they are small and isolated.

In some cases areas temporarily withdrawn from entry, pending examination, contain land unsuitable for forest reserves, and their withdrawal is viewed with alarm by local residents. It should be remembered that such withdrawals are not final, and that unsuitable portions will be restored to the public domain. All communications relating to the creation of forest reserves or to changes in their boundaries should be addressed to the Forester, Forest Service, Washington, D. C.

WHEAT RAISED ON DRY LAND FARM, CASCADE COUNTY.

IRRIGATION.

THE RECLAMATION SERVICE.

As years go by, the general interest in all matters pertaining to this absorbing subject increases, and the trend of inquiries denotes a widespread, fundamental desire to obtain information at first hand concerning its every phase. These include the flow of streams, the storage of flood waters in reservoirs, the construction of long distance canals, both under private and governmental supervision, as well as the simpler problems of water for a small farm or truck garden, and the use of artesian wells, gasoline or other engines, windmills and the like. The great problem has been and is, "Water to the unproductive land." Both are here in abundance. Separately, they are merely scenery, and not particularly edifying at that. Together, they form the solid, unfailing basis of state and national wealth and greatness. Nullifying the shortcomings of nature by making the farmer practically independent of the yearly rainfall, assuring bountiful crops in every growing season and fructifying millions of acres of hitherto waste areas.

This great problem is now in course of solution in every part of Montana, and by nearly every known modern method.

While appreciating to the full the generous and necessary aid rendered by the Government to this great cause of the common people, Montana citizens have not forgotten that much depends upon individual or co-operative effort, and work upon private account as distinguished from government enterprises has not been allowed to languish in any degree. From being the best watered state in the way of rivers and streams, Montana is rapidly coming to have the largest irrigated area, and still the field is wide. Even the vast domain segregated under the Reclamation Act, does not embrace all of the best land or possible projects by any means. It is true that millions of acres classed as grazing land will never be even considered as susceptible of irrigation, nor will a considerable part of the thirty millions of classified farming land. But with the plan now outlined and in process of construction brought in full operation, the consequent enormous increase of funds available for reclamation purposes, and the experience gained in their construction and operation together with the demand for such land, will undoubtedly extend the scope of the undertakings, and much territory now considered for various reasons unavailable, will be brought under the magic spell of life-giving water.

There seems to be but one danger, and that lies in the difficulty which is always found of securing contracts from present owners, under which they

will agree to take water from the Government ditches, and repay the cost of construction. In this connection it should always be borne in mind that real estate values depend entirely upon the water right, which in these cases is vested directly in the Government and surrendered by it to the owner upon fulfillment of the contract, thus obviating any and all danger of litigation which, by the way, is the most expensive thing connected with irrigation. However, as the value of these new lands becomes known, with full crops assured every year at renumerative prices, it is firmly believed that not only will the danger above referred to be eliminated but that thousands of industrious people will be only too willing to embrace the opportunity of securing a comfortable home and ample return upon the investment and that no difficulty will be experienced in disposing of all the land and water which the projects will supply. There has been no hesitancy in giving space to the subject of irrigation in this report, for it is believed to be of superlative importance in its relation to the people of this commonwealth. The immense tracts of land and sums of money involved, no less than the possibilities of successful enterprise with which it is surrounded, and its influence upon the welfare of every present and prospective citizen invest the Reclamation Service with an interest and charm even to the minutest detail.

GOVERNMENT RECLAMATION.

During the four years which have elapsed since the passage of the Reclamation Act an enormous amount of preliminary work has been accomplished and actual operations have been begun upon three projects in Montana, which are described later on. Of all the tracts which have been under consideration during this period, eight remain as withdrawn from settlement while the balance have been restored to the public domain, abandoned either entirely as not feasible or temporarily pending further investigation. These comprise a total of 1,489,800 acres of land, the greater part of which will be eventually placed under water.

Prices at which this land will be sold will depend entirely upon the cost of reclamation, but in most cases the average has been estimated to be from $26 to $35 an acre. While there have been, and no doubt will be future attempts to secure a direct loan from the Government to expedite the work of reclamation, present plans contemplate no actual expense to the United States for this purpose, the money being simply advanced for the various projects, repaid by the owners of the land and used over and over again for further reclamation. The original source of the fund is from the receipts of the General Land Office, apportioned among the various states named in the Act.

The total amount available for the next two years has been estimated by the Commissioner of the General Land Office to be $41,000,000, and upon this basis the following sums have been alloted to Montana projects: Huntley, $900,000; Lower Yellowstone, $2,000,000; Milk River, $1,000,000; Sun River, $500,000; a total of $4,400,000. But two states, Oregon and Arizona, received larger allotments than Montana. About $5,500,000 was added to the fund from the sale of public land during the fiscal year ending June 30, 1906.

AN ORANGE PEEL DREDGE WORKING ON THE LOWER YELLOWSTONE IRRIGATION DITCH.

ST. MARY AND MILK RIVER.

Northern Montana is the field of operations for the largest project of its kind in the State, covering as it does the reclamation of more than 450,000 acres. This is popularly known as the Milk River Project, and although one of the first selections made, and the scene of surveying operations for four years, it is only within the past six months that actual construction work has been begun. The general scheme of the Reclamation Service divides this project into two sections: First, storage of water of the St. Mary Lakes on the eastern slope of the Rocky Mountains and the carrying of the same by means of a canal 27 miles long to the Nork Fork of Milk River; second, the utilization of these stored mountain waters on the irrigable lands of the Lower Milk River Valley, extending from Havre to Glasgow.

In Northern Montana and Southern Alberta are two rivers, the Milk and St. Mary, that are international in character, their drainage basins being partly in the United States and partly in Canada. Canals have been diverting water from each river for several years past, and certain vested water rights have thus been acquired.

St. Mary River rises on the eastern slope of the Rocky Mountains in Montana and flows northward into Canada, where it empties into the Saskatchewan River, its waters being eventually lost in Hudson Bay.

Milk River has its source in the United States in the rolling country lying immediately east of the St. Mary Basin. Its two forks, North and South, flow northward into Canada where they unite; thence continuing as Milk River proper in an easterly direction for about 100 miles and then reentering the United States and finally emptying into the Missouri. The valley of Lower Milk River ranges in elevation from 2,100 to 2,500 feet, and is well adapted to irrigation if the water supply were sufficient. Milk River is deficient in this particular, and the Reclamation Service proposes to reinforce it with an additional supply from St. Mary River.

Plans are now maturing in both countries for larger irrigation works, whereby ultimately the water supply of both rivers will be utilized, and it will probably be necessary for the United States and Canada to make an agreement relative to a division of the waters of both streams.

The investigation has brought out three methods of utilizing the waters of St. Mary Basin (1) By diverting St. Mary River to North Fork of Milk River, and allowing it to run through Canada to Lower Milk River Valley in Montana. (2) By utilizing the waters on the eastern section of the Blackfeet Indian Reservation and on the lands immediately adjacent to the East. (3) By carrying the St. Mary water across both the North and South forks of Milk River to Cut Bank drainage allowing it to flow down this and Marias River 100 miles or more, then taking it out of the Marias by a canal to Big Sandy Creek a tributary of Milk River.

The most feasible project is the one first mentioned. The second scheme can also be carried out. The third method has been considered in previous reports as a possible connecting link between the St. Mary Basin and Lower Milk River, but from the detailed investigation on Marias River during 1904

it is believed that this diversion should be considered on its own merits—that is, as a scheme to make the Marias a separate source of irrigation for lands immediately west of Big Sandy Creek.

The Milk River project as designed, contemplates reclaming over 250,000 acres, divided into two divisions, (1) 91,970 acres near Chinook; (2) 158,900 acres extending from the Dodson diversion dam eastward to Glasgow, the two requiring a total of 382 miles of main line canal.

The Marias system will require 266 miles of canal which will cover 180,250 acres, with an additional area of 19,750 acres which can be reclaimed by pumping to a height of 20 or 25 feet. Thus the total area under the Milk River project is 450,870 acres.

St. Mary river has its source on the eastern slope of the Continental Divide. The snow-capped peaks of the Range and the many glaciers in the Basin contribute to the high run-off and a large water supply. The plan of the Reclamation Service is to connect this mountain drainage area by means of a canal 23 miles long with the headwaters of Milk River, and to utilize the increased water supply for the irrigation of the lower valley of the latter stream. Three gauging stations have been maintained in St. Mary Basin since 1902.

In 1900 a canal was completed in Canadian territory diverting water from St. Mary River about seven miles north of the International line. It is now the property of the Alberta Railway and Irrigation Co. The total length of the canal system is 200 miles, including laterals. Its maximum capacity as measured in July, 1905, was 311 second-feet. The government grant to this company on St. Mary River was 500 second-feet of the low water discharge, and 2000 second-feet of the flood discharge, with a time limit of 15 years in which to complete the work. The company has also a land grant of 600,000 acres from the Dominion Government provided it applies water to the same. In order to perfect title to the land the company has developed the irrigation systems described above. There are no reservoirs on the two main streams, but there are a number throughout the area controlled by the canals. These are not utilized at present.

January 15, 1906, the Secretary of the Interior authorized the construction of the St. Mary Canal. Specifications were prepared and bids were requested, to be opened on July 31. On that date the one bid submitted was considered by the engineering board as too high and it was, therefore, rejected. A little later the Secretary of the Interior authorized the construction of the canal by force account or day labor.

Beginning in August, 1906, excavation work on the lower eight miles of canal was undertaken with Indians, and this class of labor has proven quite effective.

At times 175 scrapers were at work besides plow-teams, and scraper and plow-holders. A steam shovel has been ordered, also a traction engine, dump wagons, rock drills and various other machinery necessary in the construction of the canal. All this is expected to be on the ground before the close of the year, and if weather conditions permit work will be prosecuted the entire winter.

A telephone line 36 miles long has been constructed by a private company for use of the Reclamation Service, from Browning to St. Mary River, and the Government has recently finished a line 25 miles long along the proposed route of the canal, the cost of construction of the same being $63 a mile.

In July a saw mill was established at the foot of the Lower St. Mary Lake. Timber for this mill was obtained through local contract, and cut from the Lewis and Clark Forest Reserve near the edge of the lake. The lumber is used in the construction of headquarters buildings, bridges and in the actual construction of the canal itself wherever timber is reequired, as tunnel lining concrete forms and all kinds of false work. The St. Mary project will be pushed as fast as labor and weather conditions will permit.

Construction of the second part of the Milk River plans, putting water upon the lands of the lower valley, has not been authorized, and work has therefore not been started. In explanation of the vexatious delay attending this part of the project it may be said, that no other plan of the Reclamation Service has been beset with so many really great obstacles, both from an engineering and legal standpoint. A number of private canals have been for some years in operation in the vicinity of Chinook and Harlem. No adjudication of their rights has ever been made and, therefore, the order of their priority or the amount of water they are each entitled to is not known.

The United States Government requested the settlers of the valley to inaugurate a general law suit for the determination of these rights. Before the United States should turn St. Mary water into Milk River it is desirable to know how much water the various existing canals were entitled to.

At first there was considerable opposition by the settlers to this suit, on account of the expense connected with it, but since the matter has been started they see the advantages, and are ready and anxious to have it settled. Both the lawsuit and actual construction work on the project, however, are now held in abeyance on account of a decision rendered by Federal Judge Hunt is what is known as the Fort Belknap Indian Reservation water suit, whereby the Indians were given title to 5,000 inches of water, and a priority right antedating any of the private canals, although these latter were constructed prior to the Indian ditch. The decision in question was based on the ground that the Indians were entitled to as much water as they could economically use, as it was believed that was the intent of the Treaty made about 1885, which threw open to settlement the large body of land then embraced in the old Fort Peck Indian Reservation. The effect of Judge Hunt's decision cannot be foretold at this time.

An appeal has been taken to the Supreme Court of the United States, the decision of which tribunal will doubtless establish some foundation upon which to develop policy for working out the details of this project.

The eastern part of the Blackfeet Indian Reservation and the country immediately east of it, is well adapted to irrigation. During 1904 a topographic reconnaissance was made of this section, and the total area of 164 square miles was covered. Sixty-seven per cent or 70,000 acres of this area

is a level tract of good soil. At present there is no available water supply near it, but it is possible to carry St. Mary water to the area. In order to do this, St. Mary canal, above described, would have to be extended first across the North Fork of Milk River, then to and across the South Fork to the top of the ridge or the divide between South Fork and the Rocky Coulee drainage, a tributary to the Marias. The total length of this canal would be 60 miles. The water would be turned into Little Rocky Coulee, down which natural channel it would flow for a few miles, and then be diverted to the agricultural lands.

In addition to the area just given, or up to the 4,000-foot contour there are similar additional areas that could be watered from the same supply, making the total area in this vicinity thus available for agricultural purposes 100,000 acres. The general range in altitude is from 3,700 to 4000 feet above sea level.

From a study of the resulting surveys of the Cut Bank agricultural area another possible project may have been discovered. This is the diversion of Cut Bank Creek at a point about 17 miles west of the town of Cut Bank on the north side of the creek. The elevation of the water surface at the point of proposed diversion is 3,880 feet. At the end of its seventh mile the canal would be out of its canyon and would then commence to cover the irrigable land. The total length of the projected canal is 58 miles and the total area under it is 31,000 acres. About 75 per cent of this is irrigable land, leaving a net area that could be reclaimed of 24,000 acres. A private company has been contemplating the development of this projeect, but with a canal heading somewhere several miles down stream from the point of diversion proposed. This canal would irrigate about 10,000 acres.

A gauging station was established on Cut Bank Creek at the town of Cut Bank on Aug. 4, 1905, and it is believed that the records will show enough water to supply a canal having a capacity of 250 second-feet, the amount of water that will be required in the project.

The first plan for storage on St. Mary Lakes involved the construction of one earthen dam about 50 feet high at the outlet of the lower lake. Lately consideration has been given to the construction of a dam between the lakes, or at the outlet of the upper lake, and studies of the various heights at both locations have been made. The difference of elevation between the two lakes is 12 feet, the elevation of the surface of the lower one being 4,460, and of the upper 4,472 feet. The distance between the lakes is about one and three-quarter miles. Provisions for lowering the upper to the level of the lower lake have also been studied.

It is proposed to store the flood waters of St. Mary River by constructing one or more earthen dams at the outlet of St. Mary Lakes and conducting the water by means of a canal 24 miles long to the North Fork of Milk River. This canal will be located entirely within the United States. The first six miles along the canyon side of St. Mary River will be lined with cement, and will have the following dimensions: Seven feet wide on the bottom; 73 feet deep; side slopes, 1¾ to 1; grade, 0.00125, or 6.60 feet to the mile; discharge, 1,000 second-feet. For the unlined portion, 18 miles, the section

will be as follows: Bottom width, 26 feet; depth, 9 feet; side slopes, 1½ to 1; grade 0.0002. The dimensions of the dam at the outlet of the lower lake will be as follows: Length on top, 1,600 feet; slopes on both upper and lower sides, 3 to 1; elevation of crest, 4,498 feet; effective height of dam, 31 feet. Provision is also made for excavating the channel between the upper and lower lake so that the former can be drawn down to the elevation of the latter. The reservoir capacity under these conditions will be 150,000 acre feet. The attention of the Reclamation Service was brought by the Canadian officials to a possible canal line from St. Mary River, located partly in the United States and partly in Canada that might be less costly than the all-American canal. Preliminary surveys of this international canal were made in 1905. It heads at what is known as the Paisley dam site, about 3 miles south of the boundary line, thence extends into Canada through which it continues about 8 miles, swinging back into the United States and around Willow Creek drainage for 4½ miles, finally ending in Whiskey Gap in Canada, whence the water finds its way into the drainage of the North Fork of Milk River.

The total length of the canal line is 23 miles. Preliminary estimates show that this canal would be somewhat cheaper of construction than the upper line and the annual maintenance would also probably be less.

Milk River, when it re-enters the United States, flows southeastward for about 60 miles and then continues in a general easterly direction for 170 miles until it enters the Missouri River. The valley is comparatively narrow, ranging from one-half mile to one mile in width from the International Line to a point about 10 miles east of Havre, where it widens out and has an average width of three miles down to its mouth.

The general plan for the irrigation of the valley comprises the construction of the Chain Lakes reservoir, the upper end of which is only a few miles below the International Line. This reservoir will store the flood waters of Milk River and any of the stored waters of St. Mary River that may be turned into it. The water will be turned out of the reservoir and allowed to continue down the main channel of Milk River. Two diversion systems are planned for the valley, one, known as the Chinook system, comprising the Chinook north and south canals heading three miles southeast of the town of Chinook, and the other, known as the Dodson system, comprising two canals from either bank of the stream, heading about 22 miles west of the town of Malta. The tables show the areas under these systems:

Chinook System.

	Acres.
Chinook North Canal, 38.3 miles,	44,000
Chinook South Canal, 57 miles west of Indian Reservation	14,975
On Indian Reservation	32,995
	91,970

Dodson System.

	Acres.
Malta South Canal, 31 miles	20,671
Malta North Canal, 30 miles	14,021
Beaver Creek Canal, 32 miles	13,894
Bowdoin North Canal, 65 miles	46,127
Bowdoin South Canal, 84 miles	48,370
Hinsdale Canal, 35 miles	13,723
Mud Lake Outlet, 10 miles	2,094
	158,900

This project, therefore, shows a grand total of 382.3 miles of main line canal designed to cover 250,870 acres.

A number of canals from Milk River, in the vicinity of Harlem and Chinook, have been in operation for several years. The following table gives certain data relative to them. The first five canals divert directly from Milk River, and the five latter ones from tributaries. Rock Creek Ditch is in the vicinity of Harlem.

Year	Havre	Malta	Year	Havre	Malta
	Acre feet	Acre feet		Acre feet	Acre feet
1898	205,146		1902	426,226	
1899	402,512		1903	366,516	404,076
1900	111,202		1904	165,214	280,577
1901	162,788		1905	17,110	31,070

By the construction of a dam 92 feet in height in Milk River at a point 30 miles northwest of Havre a reservoir can be created with a capacity of 466,950 acre feet. This is the Chain Lakes Reservoir project.

The dam will be located in Section 17, T. 34 N., R. 13 E. It will be an earth structure 92 feet in height, with top length 2,250 feet, and slopes 3 to 1 on the upper, and 2 to 1 on the lower side. The general elevation of the river bottom at this point is 2,555 feet, making the top of the dam elevation 2,647 feet. The elevation of the spillway will be 2,632 feet. With these dimensions the total contents of the dam will be 1,727,550 cubic yards. The spillway will be in Section 9, T. 33 N., R. 13 E., at the lower end of what is known as Chain Lakes, and the water in this spillway will discharge into the river about eight miles below the dam. In view of the legal and other obstacles encountered in the main Milk River project, it is considered practically certain that the Chain Lakes project will be pushed to rapid completion.

During 1902 a survey of what is known as the Yantic canal was made, heading on the north side of Milk River, and continuing eastward for 54 miles. In 1904 a canal on the south side of the river was run called the Chinook South Canal, heading 3 miles southeast of the town of Chinook. It continued eastward through the Fort Belknap Indian Reservation for a total distance of 57 miles. Its length from the head to the western edge of the reservation line was 15 miles, and in this distance it will cover 14,975 acres.

There are 32,995 acres on the reservation itself, making a total area under the canal of 47,970 acres.

These two diversions will necessitate two separate dams, 13 miles apart, the one at Yantic 14 feet high, and at Chinook 14 feet high.

From a study of the detailed maps it was considered best to abandon the Yantic diversion, and in its place to take a canal from the north end of Chinook dam. The area thus omitted will be 19,500 acres, but it is all practically served at present by the Fort Belknap canal, one of the private canals of this vicinity. This latter is the canal which under the decision of Federal Judge Hunt is entitled to all the water of Milk River, and it was this decision which stopped the work upon the whole Milk River project early in 1906, when bids had been opened and preparations for an active season's work had actually begun.

The dimensions of the Chinook North Canal at the head are as follows: Width, 30 feet; depth, 6.9 feet; side slopes, 1.5 to 1; grade, 0.0001; discharge, 515 second-feet. The total length of the canal is 38.1 miles, and the area covered is 44,000 acres. The elevation of the bottom of the canal at the head will be 2,383 feet.

The Chinook South Canal at the head will have the following dimensions: Bottom width, 30 feet; depth of water, 6 feet; side slopes, 1.5 to 1; grade, 0.0002; discharge, 540 second feet. The elevation of the bottom of the canal at the head will be 2,384 feet.

The diversion dam will be of concrete, with a long concrete apron at the lower end. The elevation of the top of the dam will be 2,390 feet, and the length on top will be 250 feet.

The general plan of the Dodson diversion contemplates the construction of a concrete overflow dam, with a maximum elevation above the river of 29 feet. The length of the crest will be 250 feet. It is located 23 miles west of Malta and about 3 miles west of Dodson Station on the Great Northern Railroad. The average depth to bedrock at this site is about 60 feet. The concrete dam will be founded on piles, with a row of wooden sheeting at the upper edge extending down to bedrock. The elevation at the top of the dam will be 2,285 feet. Water will be diverted from either end of the dam, the canal from the north being known as the Malta North Canal and from the south as the Malta South Canal.

From the south end of the dam an earth embankment 6,500 feet in length, and with a maximum height of 15 feet, will have to be constructed across the flat to the foothills on the south side. During flood stages of the river certain private lands will be flooded for short periods, and it will therefore be necessary for the Government to purchase them.

From the north end of the Malta dam a canal will be diverted to irrigate 14,000 acres of land between the head and about 6 miles northeast of Malta. The dimensions are: 15 feet wide on the bottom; 4.5 feet of water; side slopes, 1.5 to 1; grade, 0.00025; discharge, 200 second-feet; length, 30 miles. The first design for the Malta South Canal had a capacity of 2,000 cubic feet a second, and was to be used as a feed canal to carry the flood waters of Milk River to Bowdoin Reservoir. Owing to the discovery of Chain Lakes Reser-

voir the Bowdoin Reservoir has been abandoned for the present, and the Mud Lake site is to be used instead. It was also possible to reduce the capacity of the canal to 800 cubic feet a second. The dimensions of the first section, extending from Station O to Station 600, are as follows: Bottom width, 27 feet; depth of water, 7 feet; side slopes, 1.5 to 1; grade, 0.0003. The second section, extending from Station 600 to Station 2105, will have the following dimensions: Bottom width, 30 feet; depth of water, 8.8 feet; side slopes, 1.5 to 1; grade 0.0001. The third section, from Station 2105 to 2200, has a considerably reduced area on account of the heavy cut that is necessary. The end of this section is at Mud Lake Reservoir. The dimensions are: Bottom width, 14.4 feet; depth, 8.8 feet; side slopes, 1.5 to 1 below water surface and 1 to 1 above water surface; grade, .00032. The total length of the canal from head to Mud Lake is 41.7 miles. The site of Mud Lake Reservoir is located in Tps. 31 and 32 N., Rs. 31 and 32 E., and in order to store the water it will be necessary to build an embankment 15,135 feet long of the following dimensions: Elevation of top, 2,245 feet; width on top, 16 feet; upper slope, 3 to 1; lower slope, 2 to 1. The maximum height will be 33 feet. The total yardage with these dimensions will be 911,540 cubic yards. The elevation of the water surface when the reservoir is filled will be 2,240 feet, and the capacity when water is diverted at 2,195 feet is 179,515 acre feet.

MARIAS PROJECT.

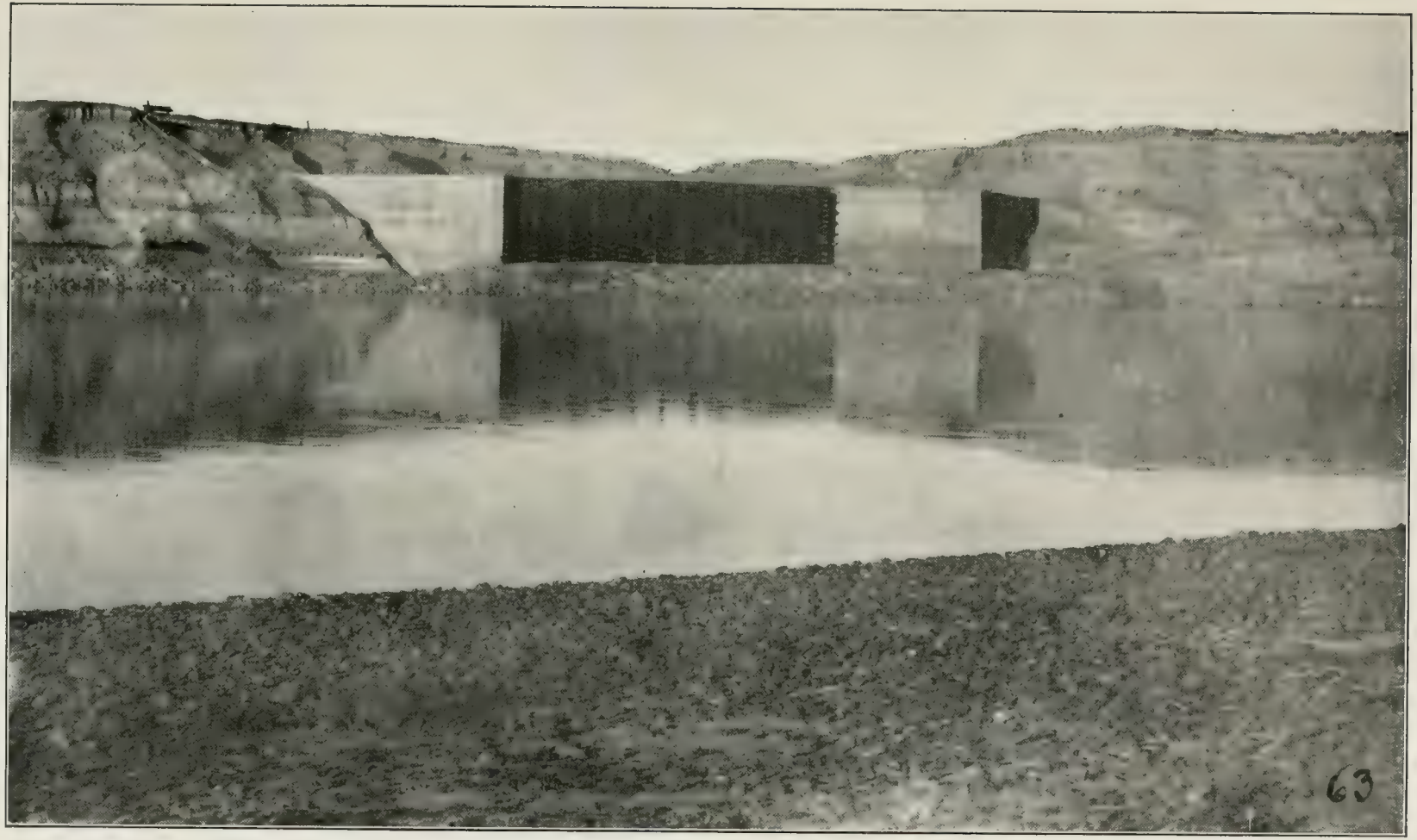
During the earlier stages of the investigation the development of Marias River was contemplated as a connecting link between the St. Mary Basin and the lower Milk River Valley. As a result of later surveys it is now believed best to consider the diversions from Marias River as a separate project not connected with the Milk River project.

The areas irrigable under present plans aggregate 200,000 acres, which includes 19,750 acres to be supplied by pumping, with a total length of main line canals of 266 miles.

During 1902 an investigation into the storage possibilities of the Upper Marias Basin was made. The most important site was that of Two Medicine Lake, which was surveyed in detail and showed a maximum limit of capacity of 1,393.1 acres, supplying 87,638 acre-feet. This would make the top length of the dam 2,150 feet. The total annual yield of Two Medicine River will approximate 100,000 acre-feet.

Topographic surveys of the Marias Canyon was begun in 1902 on a scale of one-fifth of a mile to the inch, with a contour interval of 20 feet, extending from the crossing of the Great Northern and Montana Railroad to the mouth of Cottonwood Creek.

During 1904, early in the season, this work was continued by making a reconnaissance map on a scale of 2,000 feet to one inch of the river canyon from Cottonwood Creek to below the mouth of Black Coulee. The results of this work showed that the best location for a dam is in what is known as the Sandstone Canyon of the Marias, almost exactly on the range line between Rs. 7 and 8 E. The maximum capacity of the reservoir will be 1,469,395 acre-feet, with an area of 20,989 acres.



VIEW OF THE HEADGATE ON THE LOWER YELLOWSTONE GOVERNMENT DITCH.

In August detailed surveys were begun, and consisted of mapping the dam site on a scale of 100 feet to the inch, with 5 foot contours, and of the canyon itself on the same scale from the dam site to the divide between Marias drainage and Big Sandy Creek. Diamond drill borings were also taken across the line of the dam, the located spillway and the projected tunnel line. Rock was found along the dam site at depths of from 15 to 20 feet. The formation was rather soft sandstone suitable for the foundation for the core wall. It would be hardly solid enough, however, for the foundation for a masonry dam. The principal problem here was to determine the height of a dam so that a safe and economical canal location could be made out of the canyon. As at present contemplated an earthen structure 195 feet high is to be built. The top length of the dam is 2,246 feet, with side slopes of 3 to 1 upper and 2 to 1 lower. The total contents of the dam will be 3,940,000 cubic yards. The general elevation of the river bottom is 2,685 feet. The spillway will be at 2,865 feet; the top of the dam at 2,880 feet. The storage capacity between the 2,855 and 2,880 contours is 450,730 acre-feet.

On account of the unusual height of this dam, 195 feet, it being 50 feet higher than any existing earth structure, plans have been considered for a lower dam, 150 feet high, and for pumping the remainder of the distance, 45 feet or more. As the principal function of this dam is diversion and not storage, a large percentage of the discharge of the river will be wasted. It has therefore, been proposed to utilize this waste water by developing hydraulic power for pumping. Following are the data in relation to this plant.

River elevation, 2,685 feet; elevation of top of dam, 2,835 feet; height of dam, 150 feet; elevation of top of spillway, 2,820 feet; free board, 15 feet. The minimum lift by pump, 2,820 to 2,865, will be 45 feet. Where the natural flow of the river does not supply sufficient water for the canal and for pumping, the supply of stored water for the upper 20 feet in the reservoir may be drawn on. The maximum lift for pumping would be, therefore, 65 feet.

The capacity of the reservoir at the 2,820-foot contour is 572,135 acre-feet, and at the 2,800-foot contour, 369,210 acre-feet.

The dam to the 2,835-foot level, with slopes of 3 to 1 on the upper, and 2 to 1 on the lower side, would contain 2,343,747 cubic yards.

The elevation at the bottom of the diversion canal at the head will be 2,855; the grade, 0.00015, or a fall of 0.792 of a foot to the mile. The dimensions of the canal are: Bottom width, 25 feet; depth of water, 10 feet; side slopes, 1.5 to 1; computed discharge, 1,050 second-feet.

The canal will continue down the left bank of Marias Canyon and run near its top for 9 miles, when it will cross Black Coulee and continue for 8 miles further, cutting through in this stretch the divide between Black Coulee and Big Sandy drainage. In the first 9-mile stretch there is really only 6 miles of steep side hill construction. The formation passed through will be largely soft sandstone in horizontal strata, giving a safer location than if the material were of clay, subject to sliding when wet. Twenty-two miles from the head of the canal a lateral would be taken off to be

used as a feeder to the Lonesome Lake reservoir. From the head of this lateral a high-line canal would be continued at the same elevation and grade as the preceding section.

In T. 29 N., R. 11 and 12 E., there is a natural depression known as Lonesome Lake, which basin was surveyed during 1904 as a reservoir site. In order to create this reservoir, it is necessary to construct an earthern dam at the outlet, and also an embankment 24,000 feet in length along the eastern edge of the site, with a maximum height of 24 feet. The dam at the outlet is to be 49 feet high. The main outlet will be 930 feet long and contain 74,632 cubic yards At the northeast corner two plans are possible for the embankment.

What is known as the "A" line will be the shorter of the two, containing less material; but a greater reservoir capacity will be obtained by building the "B" line. The additional capacity under this line is 9,420 acre-feet, making the total capacity 201,535 acre-feet. The embankment that is common to both lines will be 13600 feet long and will contain 98,712 cubic yards. The "A" line embankment will be 6,800 feet long, and that for "B" 10,400 feet long.

The discharge from the reservoir will be controlled by gates in an outlet tower. The water will issue at an elevation of 2,750 feet, and continue down the natural channel for 3 miles, when the west and east reservoir canals will be diverted.

The west reservoir canal will be 60 miles long and will control 30,160, and the east canal will be 38 miles long and will serve 33,740 acres.

SUN RIVER PROJECT.

Under this project it is proposed to reclaim bench lands lying between the Sun and Teton Rivers, to the extent of 200,000 acres, and embracing the famous Freezeout Bench, and the Benton Lake Bench. Extensive surveys have been made, and ten reservoir sites located, but it is improbable that all of these will ever be used. In the North Fork of Sun River a weir 170 feet in length and 72 feet high will be constructed to divert water into the North Canal, which at this point starts in a tunnel cut through very solid lime stone for the first 1,000 feet. The length of the canal to the Stone Johnnie reservoir is 13.6 miles. The survey shows a maximum capacity in this reservoir at 4,370 feet above sea level, of 45,747 acre-feet. The Freezeout Bench line canal heads from this storage, and has a length of 23.5 miles to the point where it drops into Spring Coulee. The first six and one-half miles runs through the rolling glacial country; then the line is supported along the hillsides to attain the level bench. In this interval are two tunnels, advisable both for shortening the distance, and to insure better construction. The first tunnel will have a length of 2,200 feet, and the second of 2,000 feet.

Test pits dug along this line show that the material to be encountered will be a mixture of gravel and clay with a small amount of cemented gravel.

From the point where the line reaches the bench to Spring Coulee there are about 11,500 acres of excellent irrigable land.

Upon the Freezeout Bench the canal will serve about 80,000 acres. The preliminary classification shows a very large percentage of first class land, as the soil is a very fertile sandy loam, more or less underlain and mixed with gravel, and is considered very desirable alfalfa ground. The reclaimable portion of this bench is in a compact body, about 18 miles long by 7 miles wide, with a gentle slope diagonally across it, which will allow a cheap distribution system. The slope is great enough for good drainage, and there should be no trouble from the rise of alkali. Very little preparation for cultivation will be necessary, as the surface is generally smooth, will need little grading, and has no growth of sage brush, in the latter respect being similar to all other parts of Sun River project.

After passing through the outlet tunnel of the Stone Johnnie Reservoir, the water for the Teton slope will run down a coulee into Deep Creek, and down this to the diversion weir in the N. W. ¼ Sec. 15, T. 23 N., R. 5 W., a total of about 12½ miles through natural channels.

The weir as planned will be of concrete, 12 feet high and 100 feet long, with a 500-foot earth embankment on the west side to confine the water to the channel. Test pits sunk at this place to a depth of 14 feet below the bed of the stream show stiff clay mixed with gravel for foundation material.

The distributing canal starts on the east side of the creek at the weir, and after the first half mile begins to serve the bottom lands along the creek, gradually drawing away to the southward. After passing behind Priest Butte, at a distance of 7.2 miles from the head, two alternative lines were run, one across the Priest Butte sag, the other around the Freezeout Basin. The sag line embraces 1.54 miles of canal and 4,400 feet of reinforced concrete pipe, 9 3-4 feet inside diameter, the difference of elevation of the ends being 24 1-2 feet and the greatest pressure 59 feet. The basin line is 35.8 miles long, and waters the lands of the basin its entire length. If the main supply of water should be carried through the pipe the basin would have to be surrounded by laterals, consequently the comparison of cost embraces the items of pipe and 1.54 miles of main canal plus canal laterals against 35.8 miles of open canal. At present the plan of carrying the canal around the basin seems cheaper.

A drainage channel will have to be provided to keep floods and seepage water from irrigation below the natural surface of Freezeout Lake. This channel will have a length of about 5 1-2 miles, and a maximum depth of 17 feet. It will drain into Priest Lake lying north of the sag, and a similar channel will have to be provided from this lake to Teton River to prevent the rise of its natural surface.

From the east end of the sag the main canal follows the general course of the Teton, covering the bottom lands south of the river and all the bench between it and the Teton-Sun divide, which consists of a low range of hills having a general east-and-west direction, the part west of the Great North-

ern Railway being known as the T. L. Ridge, and that east of the railroad as the Teton Ridge. The railroad crossing will necessitte a pipe 3,400 feet long, with 6-foot inside diameter, 27 feet difference in elevation of ends, and 50 feet maximum head. The line has been located for 6 miles east of the railroad crossing. There is opportunity to extend it still farther eastward if the water supply warrants, but enough land is covered by the present location to utilize all the water that is probably available for this diversion.

If, however, nothing should be done toward reclaiming land on the south side, this line may be extended to use the water now reserved to go south. The land covered by an extension would be mostly vacant. The lands lying below the Teton slope line have been classified as 98,725 acres first-class and 7,515 acres of second-class. Until a topographic survey of the irrigable lands is made their exact area and classification cannot be determined, but from the preliminary work already done it has been found that on the north side of the Sun River there are some 183,700 acres of irrigable land under the canal lines now surveyed without further extension of the Teton Slope line. The ownership is divided approximately as follows: Private, 35 per cent; State, 8 per cent; Government, 57 per cent. Among all the possible reservoir sites on the North Fork, but one was found, upon closer examination, that was really justifiable. Site No. 3, which, at an elevation of 4,970 feet has a capacity of 156,860 acre feet. A low divide 2,000 feet west of this site makes it possible to provide a spillway from which the flood waters will flow into South Fork. The proposed dam will be 190 feet high, and it was first intended to use masonry, but the great distance from a railroad—72 miles—made the cost of cement very high at the place of construction. The idea was then developed of building a combination rock-and-earth-fill dam, and examination shows plenty of material close at hand for such a structure. An outlet tunnel 800 feet long, 10x10 feet in size, with a slight arch, is planned to pass through the east abutment and will discharge 2,200 second-feet.

A plane-table survey has been made for a diversion canal from a point just below the confluence of the West Fork and South Fork to the spillway divide of Reservoir No. 3, bringing the South Fork waters through 7 miles of canal to the Reservoir. the spillway to be used both as an outlet for flood waters and an inlet for storage. This diversion would catch the flow from Elk, Goat and Bear Creeks en route.

Should the development of electric power become necessary for a pumping project, within a reasonable distance, South Fork diversion line could be developed by six miles of canal to a point where the South Fork cuts a steep bluff, with a flat just to the east, available for the location of a power plant. Here a head of 230 feet, with a discharge of 75 second-feet, would develop, with 50 per cent efficiency, 1,000 horsepower. From Reservoir No. 3, by a canal taken from the outlet tunnel to just below Limestone Reef dam site, a head of 100 feet can be had, with a canal approximately one mile in length.

With a flow of 600 second-feet from May to September, inclusive, the

irrigation season, about 3,400 horsepower (50 per cent efficiency) can be developed. A full reservoir early in the season, with the normal summer flow, will maintain the discharge.

FORT SHAW PROJECT.

On July 18, 1906, Secretary Hitchock authorized the survey and subdivision of the Fort Shaw Military Reservation as a sub-project of the Sun River plans. About 16,000 acres are available for irrigation on this reservation, and it is expected that all of this will be ready for cultivation not later than the fall of 1907. When water is available, it is the plan to make extensive experiments in the cultivation of sugar beets with Indian labor. Construction work is now under way on Government account, and Indians are largely employed.

THE MADISON RIVER PROJECT.

A number of tracts of irrigable land lies along Madison and Missouri Rivers in western Montana, comprising a total of about 175,000 acres of first-class land, 50,000 acres of second-class land, and 12,000 acres of third-class land. A rough preliminary reconnaissance of these tracts was made in 1904, which determined in a general way the areas to be considered and some of the important elevations and conditions to be provided for. These were continued during 1905 and upon a report that the expense would exceed $100 an acre, it was supposed that the project would be entirely abandoned. Later investigations during 1906, however, have both decreased the estimated cost and increased the area to be reclaimed, and the entire project has been retained for further investigation.

Under the most favorable circumstonces the cost per acre will be very high, and the work will not be undertaken until the state of the reclamation fund will justify it and the land owners decide the project feasible at the lowest possible cost. The estimate now places the figure at $1,400,000 for reclaiming 235,500 acres.

To reach the Prickly Pear Valley at Helena the line would have to be 150 miles long and the water siphoned across Jefferson River.

Owing to the appropriation of water from Madison and Missouri Rivers for water power and other purposes, the supply for irrigation on a large scale must be increased by extensive storage of the flood waters of Madison River. Surveys for a dam in Madison Canyon and for a reservoir site in Upper Madison Valley, have been made.

It may be possible by an agreement with the power companies, and taking into consideration the return waters from the irrigated country, that the quantity of water required from storage might be greatly reduced, but storage cannot be entirely eliminated. It may also be possible to reduce the cost of the project as shown by the report by a more detailed survey. As an example, reference may be made to the diversion canal from Madison River. As planned, it diverts at grade by means of a low weir, while at Madison River bridge, three miles away, the river surface is only 25 feet below the canal bed. This would indicate the possibility of effecting a considerable

saving by making a diversion at a lower point on the river by means of a high dam, but in order to determine this it will be necessary to make closer investigations. As stated above, these further studies will be made in the near future, and it is hoped that they may develop a practical plan whereby thousands of acres near Helena now wholly unproductive may be reclaimed.

As a result of investigations already made on the Madison project, studies will be made of a plan to water 16,800 acres in the vicinity of Townsend and Toston. This will be done by a canal diverting water from the Missouri River on the right bank about three and a half miles above Toston, and running in a generally northern direction for about 30 miles. There are 5,140 acres of cultivated land below the projected line, irrigated from Dry, Greyson, Gurnet and Duck Creeks, and Confederate Gulch. These lands are included in the estimated total of 16,800 acres, and could all be watered from the canal, leaving the water now used upon them for use upon other lands above. Most of the land is in private ownership. The crops are principally alfalfa, oats, rye and wheat. As the low water flow of the Missouri River, which occurs in August and September and sometimes in July, is insufficient, it would be necessary to resort to storage and it is probable that the reservoir site on Cherry Creek, or the United States reservoir sites Nos. 25 and 27, could be utilized.

The estimted cost of this project, without storage, is $254,000. On a basis of 16,800 acres of land this gives a cost per acre of $15.12; adding $5 per acre for maintenance and operation for 10 years, gives a total cost of practically $20 per acre.

It will require further investigation to determine the cost of storage, and upon this will depend the feasibility of the plan.

Extensive operations have been conducted in other parts of the State, notably in the Bitter Root Valley, but it has been definitely determined not to engage in any new enterprises until some of those now under way have been completed. Montana has been highly favored by the Reclamation Service, but stands ready to do her full share in returning to the fund the millions of dollars which have been and must yet be expended.

THE HUNTLEY PROJECT.

The lands under the Huntley project are situated in the Yellowstone Valley and extend in a compact body from Huntley to Bull Mountain Station on the Northern Pacific Railway. The lands lie south of the Yellowstone River, at an altitude of about 3,000 feet above sea level, within the ceded portion of the Crow Indian Reservation which was opened to settlement during the summer of 1906. The town of Huntley, about 13 miles from Billings, is at the junction of the Northern Pacific and Burlington Railways, and a Government townsite will be laid out there as well as at several other points, sufficiently numerous at least to afford ready transportation facilities to all portions of the tract.

The project was outlined in 1904 and surveys were worked up the following winter, plans being made for the irrigation of from 30,000 to 35,000 acres of land.

The first two miles of the canal line had to be located along the Huntley Bluffs, adjacent to the railway tracks. It was found desirable to carry the canal on the south side of the railway and away from the river, and this necessitated three tunnels—No. 1, 600 feet long; No. 2, 1,550 feet long, and No. 3, 390 feet long—making an aggregate length of 2,540 feet. These tunnels are 9.2 feet wide, and about 9 feet high at the center of the arch. They are driven through a rather soft sandstone and will have a concrete lining from 6 to 12 inches thick.

At Pryor Creek there is a cut-off and grade crossing. All structures on the main canal are of concrete, plain and reinforced, of the most substantial and permanent form. One of the most interesting features is the power plant. The canal line from Huntley eastward follows the Burlington railroad to a point beyond Ballantine, where it was necessary to put in a drop of about 34 feet in order to keep the main canal at the foot of the bench and in good ground for construction. The quantity of water carried at this point is about 240 second-feet. When the plant is in operation the water passes through a turbine having a vertical shaft on which is mounted a centrifugal pump, fed from the pressure pipe. The pump lifts a portion of the water—about 56 second-feet—to a height of 57 feet, where it enters the high-line canal, which covers the bench lands between Ballantine and Fly Creek and adds about 3,000 acres to the irrigable lands. The operation of the power plant is intended to be nearly automatic. It is simple and durable and the cost of operation and maintenance will therefore be very low. There is another drop in the canal, but no provision has been made to utilize the available power.

Bids for the main canal and structures were opened June 28, 1905, and the contracts awarded, but for various reasons the successful bidders refused to commence operations, whereupon the contracts were transferred to the next highest bidders. Satisfactory arrangements having been made, work was at last begun, and at least a portion of the canal will be ready for water in the spring of 1907. The canal will divert, under normal conditions, 400 second-feet from Yellowstone River. The headgate structure and canal elevation have been so arranged that water is taken out down to the bottom of the river thus avoiding the expense of a weir, and precluding a shortage of water.

The discharge of the Yellowstone River at the Billings gaging station during 1904 varied from a minimum of 2,740 second-feet in December, to a maximum of 32,580 second-feet in June. Even the minimum discharge in midwinter is so far ahead of the present appropriations that the question of water supply may be dismissed with the statement that there is a bountiful supply, and that proper filings, under Montana law, have been made on 750 cubic feet per second. The excess filed on is to provide for its use for domestic and power purposes.

By reason of the lands under this project lying within the ceded portion of the Crow Indian Reservation, there will necessarily be a different system of disposition from that pursued under projects where the land, or part

of it, is in private hands. What plan will finally be adopted cannot now be told, but it is probable that some system of drawing will prevail as was the case in the opening of the reservation.

If the cost of the work as estimated is $1,000,000 and the area reclaimed is 32,000 acres, the cost an acre to the settler will be exactly $31.25, to which must be added the Government price of $4.00 an acre, or $35.25. This is thought to be very reasonable, indeed, for land of this character with unfailing and perpetual water supply.

WACO-SANDERS SUB-PROJECT.

This project comprises three tracts adjoining Yellowstone River on the south, and is practically an extension of the Huntley project.

The Waco tract extends from above Waco Station on the Northern Pacific to Bighorn tunnel, just beyond Custer Station; a tract near Bighorn lies at the junction of the Bighorn and Yellowstone Rivers; the Sanders tract extends from Myers Station to Armell's Creek, about six miles west of Forsyth.

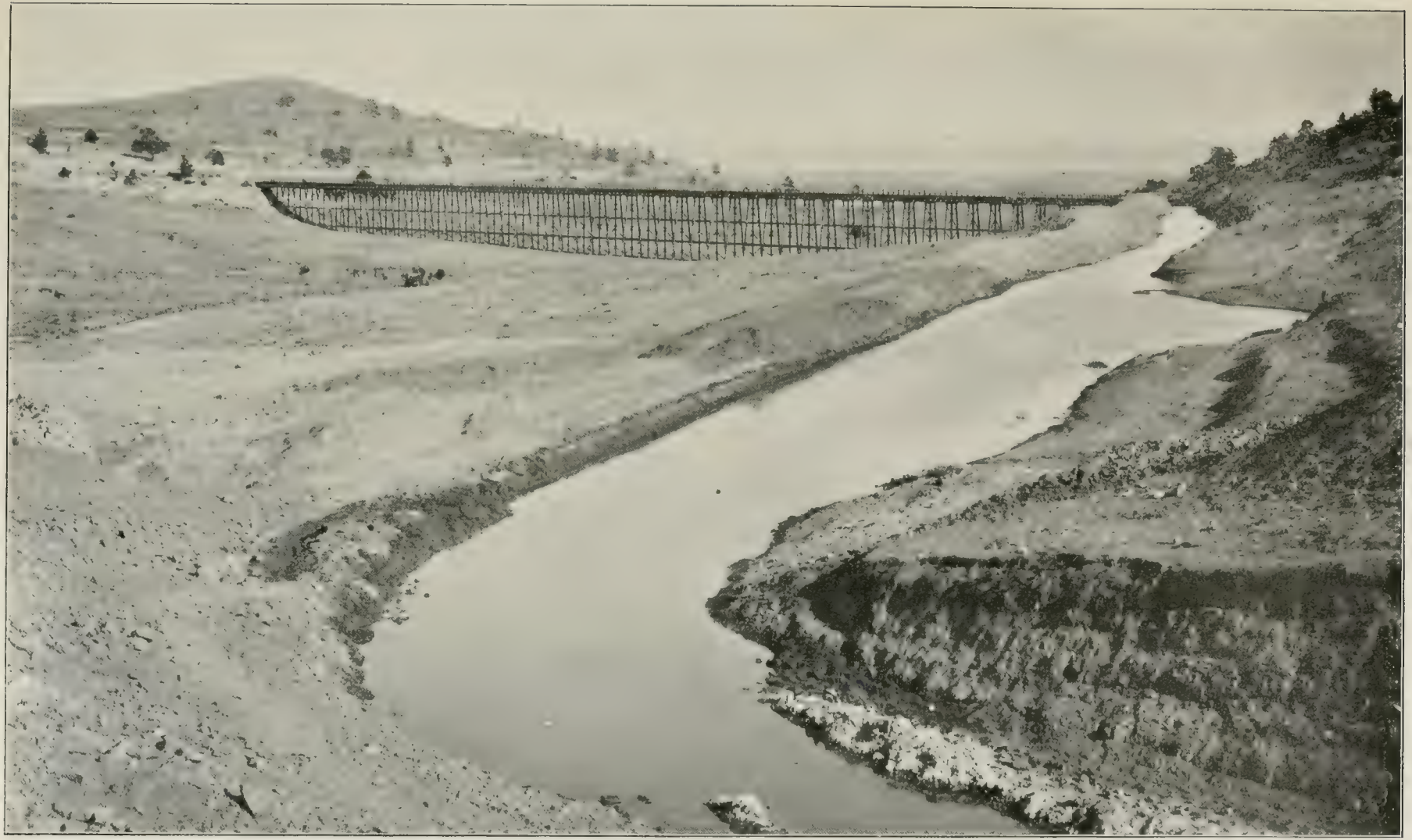
The lands comprised in this tract were withdrawn from settlement just prior to the opening of the Crow Reservation to the extent of 50,000 acres. They are of fine quality, those at the lower end being about 2 500 feet above sea level. All the land is in the ceded portion of the Indian Reserve except about 5,000 acres at the eastern end. Only what will measure about four sections of land were allotted to the Indians east of the mouth of the Bighorn River.

In the Waco tract there are between 4,000 and 5,000 acres, at Bighorn about 1,500 acres, and in the Sanders tract from 13,000 to 23,000 acres, depending on the scheme of irrigation adopted. It is a question whether to provide a gravity system on the Sanders low line canal for about 17,000 acres, or to resort to power development and pumping so as to increase this to 23,000 or to 27,000 acres. The Waco ditch can be utilized at a small relative expense for the production of power, and it is proposed to use this power in pumping at Bighorn and at Myers station, on the upper end of the Sanders tract.

The water will be taken from the Yellowstone River and the supply is ample. The diversion for the Waco ditch is planned to be from the bottom of the river, no provision being made for a weir, and the Sanders low line is handled in the same way.

BIG HORN SUB-PROJECT.

This project comprises a large area of high bench lands west of Bighorn River, extending from the mouth of Bighorn Canyon, beyond Peritsa station on the Burlington railroad just west of Fort Custer. The strip of lands to be irrigated is about 40 miles long, and are perhaps the finest to be found on the reservation. They are all high, well drained bench lands, lying at an elevation of about 3,200 feet above sea level and from 50 to 200 feet above the river. There would be from 40,000 to 50,000 acres under the canal, the amount depending on the exact elevation finally selected for the dam.



A SCENE ON THE BILLINGS LAND AND IRRIGATION CO'S DITCH.

In the allotment made to the Indians upon the opening of the Crow Reservation, the lands upon which it was proposed to place water by this project were much sought after by the Indians themselves, and nearly one-half of the total allotments so made were along the west bank of the Bighorn River above Fort Custer. It will be interesting to note the action of the Government from this time upon this project, as well as upon the Fort Custer project, which is in the same relative condition. The irrigable lands under this system lie in a rather narrow strip along the river and slope gently back to the foot of a high bench. They stand approximately 3,000 feet above sea level. The soil is rich and can easily be drained. Under the canal there are about 28,000 acres of irrigable land, of which nearly 10,000 acres are still within the reservation and are included within the old Fort Custer Military Reservation. Most of the Indian land has been allotted and there are a number of old allotments in the ceded portion under the Fort Custer Canal line. At present there is just about enough water in the Bighorn at low stage to supply the requirements of the Bighorn and Fort Custer projects and the Indian ditch on the east side of the river, which covers about 30,000 acres.

BY-LAWS OF THE LOWER YELLOWSTONE WATER USERS' ASSOCIATION.

ARTICLE I.

Section 1. The administration of the affairs of this corporation shall be vested in a board of five directors elected from among the stockholders who shall hold office for one year and until their successors are elected and qualified.

Section 2. Directors shall be elected annually at stockholders' meetings. The annual meeting shall be on the first Monday of December of each year, for the election of directors. Two weeks notice by advertisement signed by the secretary in a paper of general circulation in the canal district shall be given of such meetings.

Section 3. Elections shall be by ballots and conducted as provided in section 436 of the Civil Code of the State of Montana.

Section 4. The directors shall represent the corporation as agents of the stockholders and possess all the powers usually conferred upon them by law. They may act through the president as their agent or any special agent from among the directors or stockholders to be by them elected. They shall have power to fill any vacancy in the board of directors.

ARTICLE II.

Section 1. The officers of the association shall consist of a president, vice president, secretary, treasurer and auditor, who must all be stockholders.

Section 2. The president must be elected from among the directors immediately after the organization of each new board. He shall perform all the duties enjoined by law and sign all contracts and instruments in writing executed for and on behalf of the association. Shall prepare annual reports required by sections 451 and 909 of the Civil Code. Shall be executive officer of the board of directors and the managing agent of the association in all its executive affairs; and subject to the control of the board of directors and stockholders. Shall have power to negotiate all contracts concerning the operation and business of the association. His term shall begin with his selection and end with the selection and qualification of his successor; he shall make report of the association's business at the time of each annual stockholders' meeting; shall have supervision over all its officers and employees and all appointments of employees shall be subject to his approval.

Section 3. The vice president shall be selected in the same way and have the same qualifications as the president and in the absence of the president shall exercise the powers of the former, holding office for a similar term.

Section 4. There shall be a secretary and treasurer of the Association who shall be selected by the board of directors and shall hold office until removed or until their successors are chosen and qualified. They shall perform such duties respectively under the direction and control of the president and board of directors as are usual to said officers or as may be enjoined by law. The secretary shall keep the record journal and the stock transfer and books of the association as provided in sections 540 and 541 Civil Code, and shall be custodian of its corporate seal and shall sign with the president all contracts and instruments in writing for and in behalf of the association and the treasurer of its monies and financial accounts and both the secretary and the treasurer shall file bond with satisfactory sureties to the board of directors in a sum named by them for the faithful performance of his duties and the delivery of all the company's property to his successor.

Section 5. The auditor shall be appointed by the board of directors from among the stockholders and shall hold office until removed or until a successor is chosen and qualified; and shall have direct charge of all books of account dealing with receipts and disbursements and power to enforce a system of keeping the same; shall prescribe, on the approval of the president and board of directors, forms of pay-rolls, vouchers, accounts, reports and returns required in that department and when to be rendered; and shall check and examine all accounts as often as prescribed and see that all proper returns of receipts and correct vouchers are made and turn over to him for disbursements all bills and pay-rolls for the previous month, certified in detail, shall be turned over to him at such time as he may prescribe in the succeeding month to be approved and audited by him if correct; he shall only approve vouchers certified to be correct by the heads of the department where incurred, and despite the certification shall himself use diligence to see that they are correct, referring back in case of doubt, if still unsatisfied to the president and board of directors; he may appoint, subject to the approval of the board of directors, all subordinates in his immediate office and shall file a satisfactory bond with the president and board of directors in a sum named by them for the faithful performance of his duties and the delivery of all the company property to his successor.

ARTICLE III.

Section 1. The directors shall at their regular meeting in October of each year fix the date for the holding of a caucus of the shareholders in each director district for the nomination of candidates for director, which date must be at least fifteen (15) days before the general election on the first Monday in December.

Section 2. All nominations for candidates must be filed with the secretary of the association at least ten (10) days before the general election.

Section 3. All caucauses for the nomination of directors in each director district must be conducted in the way and manner provided in sections 1332 and 1333 of the Political Code of the State of Montana, for the conduct of a political caucus.

Section 4. Other nominations for director may be made in the way and manner provided in section 1313 of the Political Code of the State of Montana for nominating candidates for public office.

ARTICLE IV.

Section 1. In all stockholders' elections the secretary of the association must perform all the duties prescribed by law for County Clerks and Registry Agents in county elections, and the manner and method of holding and conducting such elections shall in all respects be in conformity with the requirements of Montana state laws governing the conduct of county elections.

Section 2. Special stockholders' meetings may be called at any time by the president or a majority of the board of directors by advertisement two weeks in a paper of general circulation in the canal district.

ARTICLE V.

Section 1. Regular meetings of the board of directors shall be held on the second Tuesday of each month.

At the regular meeting on the second Tuesday of December of each year the board shall sit as a canvassing board for the election held on the first Monday of December and issue certificates of election to persons found elected to the respective offices.

Section 2. Each new board of directors elected on the first Monday of December of each year shall meet and organize at the regular monthly meeting of board of directors in January of the following year.

Section 3. Special meetings of the board of directors may be called at any time on notice of the president or a majority of the board of directors by wire, telephone, letter or publication.

Section 4. A majority of the board shall constitute a quorum for the transaction of business.

Section 5. The rules of parlimentary procedure as compiled by Roberts, as far as applicable and when and where not otherwise provided, are adopted as the rules of conducting all meetings.

ARTICLE VI.

Section 1. Salaries of all officers shall be fixed by the board of directors from time to time. The salaries of subordinate employees shall be fixed by the president subject to the approval of the board of directors.

ARTICLE VII.

Section 1. The board of directors at their meeting in February of each year shall estimate the expenses of conducting the business of the association for the current year and levy an assessment on the subscribed stock as provided by the laws of Montana, payable at a time or times to be fixed by the said board.

ARTICLE VIII.

Section 1. The board of directors shall as soon as notice is received from the proper official of the United States Government that a regular assessment for a water right is due. give notice to each subscriber and demand such payment or installment as required by the United States Government as provided in section 452 of the Civil Code of Montana.

ARTICLE IX.

Section 1. The territory described in section 5, article 4, of the Articles of Incorporation shall be and the same is hereby divided, temporarily, until a permanent division giving equal acreage to each division is made by the board of engineers, into ..... director divisions.

ARTICLE X.

Section 1. These by-laws when adopted, must be certified by a majority of the directors, and the secretary, and kept in the book of by-laws. They may be amended or repealed or new ones adopted, at any annual meeting, or at any stockholders' meeting called by the directors by a vote of two-thirds of the stock subscribed, or by written consent of two-thirds of the stock without a meeting. This power of amendment or repeal may be delegated in a similar way to the board of directors, and likewise revoked at any regular or consent meeting of stockholders all in conformity with section 433 of the Civil Code of Montana.

ARTICLE XI.

Section 1. The board of directors of this association shall have power to make and adopt all by-laws required or approved by the Secretary of the Interior.

ARTICLE XII.

Section 1. It shall be the duty of the secretary of this association to receive payment of all assessments levied against the shareholders of this association, and in

case such assessments become delinquent, to take such steps for the collection of the same as are provided by law and by these by-laws.

Section 2. In levying any and all assessments the board of directors shall make an order which shall be substantially in the following form:

Sidney, Montana, (Date).

The board of directors of the Lower Yellowstone Water Users' Association hereby order that there be and there is hereby levied against the owners of each share of the capital stock of this association the sum of $..... per share and that the same be and is hereby declared a lien on the land to which the same are appurtenant, to be paid to the secretary of this association at the main office at Sidney, Dawson County, Montana, on the ..... day of ....., 19...., thirty days after the assessment is made. The secretary shall forthwith pay all such sums received by him to the treasurer and take the treasurer's receipt therefor.

Section 3. Upon the entry of the said order it shall be the duty of the secretary forthwith to make out a list, in duplicate and in alphabetical order of all the owners of shares of capital stock of this association with the post office address of each and showing the number of shares owned by each and the land to which they are appurtenant. Said list shall be in the following form:

Name of Shareholder Number of Shares Lands to which appurtenant P. O. Address

Section 4. Upon the completion of the assessment lists they shall be signed by the president, countersigned by the Secretary and attested by the seal of the corporation and one copy shall forthwith be delivered to the treasurer of the association, and the secretary shall forthwith write or print and mail postpaid to each of the shareholders mentioned in the list, and also cause to be published in a newspaper of general circulation and devoted to the publication of general news in the county in which the works of the corporation are situated, once a week for four successive weeks, a notice, which shall be in the following form:

Lower Yellowstone Water Users' Association.

Sidney, Montana, (Date).

Notice is hereby given that at a meeting of the directors, held on the ..... day of ....., 19...., an assessment of $..... per share was levied on the capital stock of the corporation which must be paid on or before the ..... day of ....., 19...., (40 days from date of levy), to the secretary of this association at Sidney, Dawson County, Montana. Any stock upon which the assessment shall remain unpaid on the ..... day of ....., 19...., will be delinquent and the land to which such shares of stock are appurtenant together with the shares of stock or so much thereof as may be necessary will be advertised for sale at public auction, and unless payment is made before, will be sold on the ..... day of ....., 19...., (15 days from the date the stock becomes delinquent), to pay the delinquent assessment together with costs of advertising and other expenses of sale.

.....

Secretary L. Y. W. U. A.

Section 5. During the period of the delinquency of the payment of any of the assessments under the provisions of this by-law no water shall be served to or for the use of the delinquent shareholder. The withholding of the use of water to delinquent shareholders under the provisions of this section shall not, however, be deemed a waiver by the association of any other or simultaneous procedure for the enforcement of the payment of delinquent assessments prescribed by the by-laws, but such other procedure may be pursued notwithstanding.

Section 6. Assessments levied under the provisions of this by-law shall be payable to the secretary of the association at his office in Sidney during ordinary office hours. It shall be the duty of the secretary to give to each shareholder paying his assessment a receipt dated of the date when payment was made and stating by whom

payment was made, upon what number of shares paid and a description of the land to which they are appurtenant.

Section 7. Within fifteen days after the expiration of thirty days fixed for the payment made and levied under the provisions of this by-law, the secretary shall make out a list of all shareholders who are delinquent in the payment of said assessments and the amount of such delinquency, which list shall be known as the delinquent list of assessments and shall be in form as nearly like that of the original as practicable, with proper adaptations thereto.

Section 8. Upon the completion of the delinquent list mentioned in the foregoing section of this by-law, the secretary shall forthwith make out and have published in the same paper in which the notice hereinbefore provided for shall have been published, a notice substantially in the following form:

Notice is hereby given that: Whereas, on the ..... day of ....., 190.., the board of directors of the Lower Yellowstone Water Users' Association, by virtue of the power vested in it by law, by the articles of incorporation and by the by-laws of said association, ordered the levy of an assessment against the shareholders of said association and declared the same to be a lien on the lands to which the shares of the capital stock of the association of the several shareholders are appurtenant of $..... per share, payable on the ..... day of .....19....; and,

Whereas, the shareholders mentioned in the list herein below printed have failed and neglected to pay the amount so levied against them rspectively, and

Whereas, it appears that all proper things prescribed by law and the by-laws and the articles of incorporation of said association for the making, ordering and levying of said assessment to fix the lien thereof on the lands to which the said shares are appurtenant, have been done.

Now, therefore, by virtue of the premises and of the power conferred on me by law, and by the by-laws of said association, I will offer for sale at public auction to the best bidder for the least part or portion thereof for a sum sufficient to pay said assessment and the costs of this advertisement and of said sale, the lands in said list described and owned by the person therein named for the amount noted against them respectively. Said list is as follows:

Lower Yellowstone Water Users' Association, Sidney, Mont., (Date.)

Name of delinquent shareholder .....
Number of stock certificate .....
Description of land .....
Amount of assessment .....

Said sale will commence at 10 o'clock A. M., on ....., the ..... day of ....., 1906, at the front door of the Court House of ..... County, ... and there continue during the hours from 10 A. M. to 12 M., and from 1 P. M. to 4 P. M., of each day from day to day until all of said property or so much of the several pieces thereof shall be sold for sums sufficient to pay said assessments and the costs aforesaid.

Given under my hand this ..... day of ....., 19....

.....
Secretary of the L. Y. W. U. A.

Said notice shall be published for two weeks in the aforesaid newspaper and the first publication must be at least fifteen days prior to the day fixed for the sale.

Section 9. On the day advertised therefor, the secretary shall attend at 10 o'clock A. M., at the front door of the court house of Dawson County, Montana, and then and there offer at public auction and sell the least portion of the lands of the delinquent shareholders to which the shares are appurtenant, that will sell for a sum sufficient to pay the delinquent assessments and the costs levied against them respectively.

For the purpose of paying the costs of advertisement of such sales the secre-

tary, before publishing the same shall add to and collect as a part of each assessment the sum of thirty-five cents. Such sale shall be for cash and the property sold shall be openly struck off to the successful bidder therefor, and a note in writing thereof instantly made by the secretary who shall act as the clerk of such sale, on the delinquent list or a copy thereof. Said sales shall continue from day to day until all such property shall have been sold, or so much thereof as may be necessary to pay the delinquent assessment.

Section 10. On the completion of each of said sales and the payment of the purchase price therefor by the purchaser, to the secretary, he shall make out and deliver to the purchaser a certificate. Said certificate shall be substantially in the following form:

It is hereby certified that on the .....day of ....., 19...., the board of directors of the Lower Yellowstone Water Users' Association made and ordered an assessment against all the shares of the capital stock of said association of $..... per share, and declared the same to be a lien on the land to which the said shares are appurtenant. That ..... is the owner of..... shares of said capital stock, which are appurtenant to the following described lands, to-wit: (Describe land as to location), situated in ..... County, State of ....., containing ..... acres, making the assessment against said shares and the lien on said lands $.....

That said shareholder failed and neglected to pay said assessment within the time prescribed therefor, by said order of assessment and the by-laws, and the laws of this state and after due advertisement as prescribed by law and by the by-laws, I sold at public auction the following, being a part of said lands, to-wit: Section ..... township ....., range ...., to ..... for the sum of $....., that being the amount of the said assessment then due and unpaid, and costs, and that being the smallest portion of said lands against which said assessment was levied that would sell at such sale for that amount.

If said land hereinbefore described be not redeemed as provided by law, then ..... or his assigns will on the ..... day of....., 19..., be entitled to a deed of conveyance therefor.

Witness my hand in duplicate this ..... day of ....., 19.....

.....

Secretary of the L. Y. W. U. A.

Subscribed and sworn to before me this ..... day of ....., 19.....

....

Notary Public in and for ..... County,

State of .....

Section 11. Said certificate shall be made in duplicate, one of which shall be delivered to the purchaser.

Section 12. Before delivering the certificate as above prescribed to the purchaser, the secretary must enter in a book to be kept by him for that purpose, the name of the shareholder whose land was so sold, the description of the land so sold, the date of the sale the name of the purchaser and the amount of the price for which the land was sold. The entries in said book shall be numbered consecutively, and the corresponding number of the entry shall be indorsed on the certificate of sale. The book so kept shall remain in the secretary's office and shall be open to the inspection of the public during business hours while not in use by the secretary in the discharge of his duties.

Section 13. Upon the redemption of any land from sale as herein provided, the secretary shall not note in the book wherein such sale is entered the fact of such redemption by writing opposite said entry the word "redeemed," the date of redemption, by whom redeemed and the amount paid for redemption.

Section 14. All assessments which have been or which shall be paid on land which shall be determined by the proper officer of the United States to be

non-irrigable by reason either of the location of the ditch or of the natural condition of such land shall be placed to the credit of the shareholder paying said assessment or assessments and allowed as a part payment of the future assessments on lands belonging to him or his transferee, which are irrigable.

LAKE BASIN PROJECT.

The lands to be irrigated under the Lake Basin project are in Yellowstone and Sweetgrass Counties, in a tract between Billings and Greycliff running back 35 or 40 miles northward from the Yellowstone River.

The two main bodies of irrigable land are the Lake Basin, containing about 100,000 acres in Tps. 1 to 3 N., Rs. 19 to 22 E., at elevations ranging from about 3,900 to about 4,200 feet, and the Twenty-Mile Basin, containing about 75,000 acres, in Tps. 3 and 4 N., Rs. 22, 23 and 24 E., at elevations ranging approximately from 3,700 to 4,000 feet. Other smaller tracts may bring the total to perhaps 250,000 acres or more.

During the field season of 1905 reconnaissance surveys were made to determine the amount of irrigable land, and a line run to show roughly the length and position of the canal. The latter survey has shown that in order to get water into the Lake Basin at an elevation of 4,200 feet it will be necessary to construct a canal heading probably between Livingston and Big Timber, and running for about 200 miles along the southern slope of the Sweetgrass divide. Much of this distance will be rock work and there is a considerable amount of cross drainage. There is some possibility that by raising the line about 400 feet a tunnel may be made from a branch of Sweetgrass Creek through the divide directly into the basin. After getting around the end of the Sweetgrass divide the line runs for about 35 miles around the Lake Basin and a smaller basin on its northern side known as the Hailstone Basin—in which it may be possible to provide storage—leaves this basin by a tunnel and in about seven miles enters the Twenty-Mile Basin. Continuing about 45 miles around that basin and dropping 300 feet near its northern end. The railroad land in this area is now all in private ownership. But very little public land has been taken up.

CLARK FORK RECONNAISANCE.

Clark Fork heads in the Rocky Mountains close to the northeast corner of Yellowstone Park in Wyoming, and runs in a general easterly course in that state for about 40 miles, receiving in this stretch several important tributaries, so that when it leaves the canyon it has become a stream of sufficient size, when regulated by some storage, to irrigate 200,000 acres. After leaving the canyon it runs northward until it empties into Yellowstone River at a point 20 miles west of Billings.

In Wyoming some irrigation has been accomplished by farmers whose lands lie along its banks on either side. In Montana irrigation has been practiced for several years throughout its whole length, approximately all of the low land lying close to it having been supplied with its water. Most of the canals have been taken out by the farmers themselves, but some have been built by companies.

About fifteen creeks are tributary to Clark Fork throughout its entire length. These streams are dry all the year except during the snow-melting period and the rainy season. They vary in length from 2 to 12 miles, and most of them enter the stream at right angles. Some of them are steep in grade, particularly near the divide separating the Clark Fork from the Rocky Fork drainage. Along the large streams in many places are small tracts of land that carry soil of fine quality which, at a few places where water has been run onto it is very productive. These tracts are small and are broken

VIEW OF INSIDE OF HEADGATE ON LOWER YELLOWSTONE BEFORE COMPLETION, 17 MILES NORTHEAST OF GLENDIVE—ALSO SHOWING U. S. ENGINEERS' CAMP.

by small drainage ways, so that a piece of land 640 acres in extent is seldom seen. Long lines of lateral ditches will therefore be necessary to reach the irrigable areas. The total area available for irrigation may be large, but it is long drawn out.

The general idea of the reconnaissance was to obtain information as to the possibility of diverting water in the vicinity of the canyon, and of taking it across the divide into the Rocky Fork drainage, thus heading all the creeks draining into the fork, and then to again divert it northward from the Rocky Fork onto some of the benches near the Yellowstone, where the fork empties into. This work is now under way, and enough has been done to show that a main line canal 327,000 feet long will supply water to 24,500 acres of first-class and 13,850 acres of second-class land. It is also shown that a long line of main canal will be necessary through very rough country; that the excavation will be to a considerable extent in rock; that one or two tunnels will be necessary, and that the irrigable land is distributed over a very great area and is intercepted by numerous hills and valleys. The water supply according to measurements made during the past season is ample. The soil that would come under this proposed canal being very productive, a high cost

per acre may be expected should sufficient irrigable land be found. The owners of land along the fork will be a unit in favor of the project.

LOWER YELLOWSTONE PROJECT.

This project includes about 70,000 acres along the left or west side of the Yellowstone River, extending a distance of nearly 70 miles. The diversion canal is taken from the river at a point 17.7 miles northeast of Glendive, where a headgate has been completed, and a contract let to the Pacific Construction Company of Portland, Oregon, to build a rock-filled dam at a cost of $140,000. This work will be 700 feet long, with a wing on the opposite side from the headgate 1,100 feet long, thus raising the river five feet above low water level. In the fall of the year water in the river at this point is only about ten feet deep at the deepest place.

The headgate, construction of which was begun in August, 1905, was completed September 1, 1906, at a cost of $50,000. It is 41 1-2 feet high, 163 feet long, with two wings additional, each about 80 feet long.

At the bottom are 11 round openings each 5 feet in diameter which serve as intakes for the canal. In the construction of the headgate there were used 5,000 barrels of cement and 67,000 pounds of steel reinforcement to prevent cracks which might otherwise occur in consequence of changes in temperature. Ice guards are also placed on the river side of the headgate to protect it from damage by floating ice and gorges which occur in the river each spring.

The deepest cut that is to be made along the route of the canal will be right at the headgate, where the river bank will have to be cut to a depth of 55 feet. The canal will be 23 1-2 feet wide at bottom, 53 feet across the water surface, and constructed with a grade of one foot in each 10,000. The capacity is 840 second-feet and the velocity two feet a second.

There are no tunnels along the route, but 150 structures of various character, such as, for instance, seven inverted siphons, three creek crossings, conduits, flumes, sluice ways, and spillways, one of the latter occurring every five miles. The main canal is 67 miles long and will require 5,700,000 yards of excavation, 900,000 of which are now completed. Of the main canal, twelve miles are finished, together with some 60 miles of laterals out of a total of 320 miles.

To facilitate construction contracts the main canal is divided into nine districts. The first extends from the headgate 7 1-2 miles, and the others range from 3 to 12 miles. These carry the canal to the Missouri River, near Mondak.

There has been much difficulty in holding successful bidders to their contracts, and to date the sum of $40,000 has been forfeited on them.

Twenty-two engineers, with a subsidiary crew of forty men, constitute the engineering corps. During the summer of 1906, 240 teams were employed and about 350 men.

Three orange peel dredges and one traction dredge are now on the work, each of the first having a capacity of about 500 cubic yards a day.

One of the most useful appurtenances of all this work is the two-line copper wire telephone system, which has been built from Glendive to Mondak at a cost of 15,000. This line is used by settlers in the Valley also, at merest nominal charge.

The Northern Pacific Railway Co., before building, was granted by the National Government all odd sections in a strip of land 40 miles wide on each side of its line, with a ten mile indemnity strip on each side of the 40 mile strip through Montana; consequently the company holds a large amount of land in this project, under the name of the Northwestern Improvement Co. Arrangements have been made between the Reclamation Service and the railway company whereby these unsold lands within the project will be sold at $2.50 an acre, and only to those who are eligible for a water right. The purchaser will also be governed by the rules and regulations of the Reclamation Service and cannot obtain title to the land until payment for the water right is completed.

During the fall and winter of 1904 and winter of 1905, a water users' association was formed, and practically all the land was brought into the association. Although the people were very enthusiastic regarding the matter of obtaining water for their land, the work of organizing was very difficult, since the people are so widely scattered. Considerable difficulty was also found in making the articles of incorporation conform to the state laws of Montana. The association entered into a contract with the Secretary of the Interior on October 25, 1905, authorizing him to build the project, and active work was forthwith begun.

LOWER YELLOWSTONE WATER USERS' ASSOCIATION.

To acquire a practical understanding of the priveleges, duties and purposes of water users' associations, a careful study of both the subscription for stock and contract and agreement is necessary. They are carefully drawn to meet all the requirements of the Reclamation Act, and to protect the interests of the land owner and the Government.

The latter instrument is used for deeding lands in trust to the association where more than 160 acres is owned by the party deeding the same. In view of the fact that the formation of this association, its by-laws, subscription for stock, and contracts, are all required by law and made and executed under the direct supervision of the Government in all reclamation projects, they are all given in full, not only to preserve the record but as a matter of information and assistance.

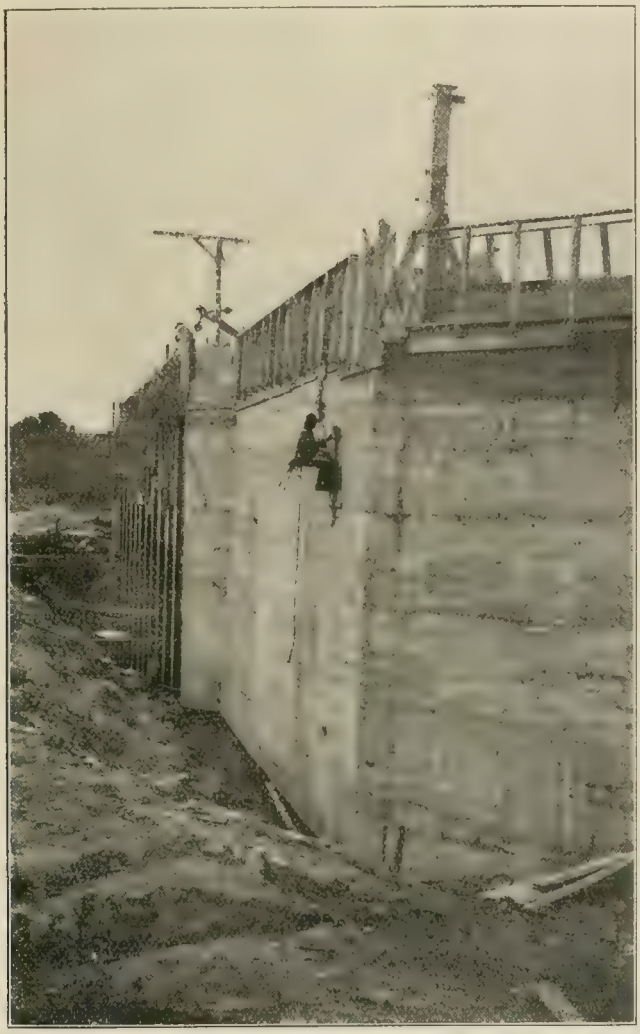
The statement herewith was very kindly furnished by Mr. John F. Kemmis, of Sidney, Mont., the secretary of the association, the first of its kind to be established in Montana.

Articles of incorporation of the Lower Yellowstone Water Users' Association were filed with the Secretary of State January 23d, 1905.

Having thus a legal existence as a corporation, a contract was signed with the United States on the 25th day of October, 1905, whereby the association, in consideration of the Government's agreement to construct the

Lower Yellowstone Canal, guaranteed to return in ten annual payments—the first to be made within a reasonable time after water is first delivered from the canal—an amount equal to the actual cost of construction.

The estimated cost of constructing the ditch is $1,800,000. There are approximately 60,000 acres of land that are irrigable from the canal, thus



HEADGATE OF LOWER YELLOWSTONE GOVERNMENT IRRIGATION PROJECT BEFORE COMPLETION—VIEW TAKEN FROM A POINT BELOW THE STRUCTURE.

making the actual cost of irrigating the land $30 per acre. As one-tenth of this amount is to be returned each year for a period of ten years, each acre must pay its proportionate $3 each year until the entire cost of constructing the canal has been returned to the Government, when the management and maintenance of the canal will be turned over to the association.

As no expense will be spared in making the ditch perfect it is expected that the cost of operating, when once completed, will be reduced to a minimum.

The lands to be irrigated lie between the 47th and 48th degrees of latitude.

Owing to the extreme dryness of the atmosphere, the excessively cold weather which occurs at times during the winter is easily borne by man and beast, and the climate seems healthful at all times.

Precipitation, while sometimes heavy and frequent during the month of June, is insufficient to insure a perfect crop. Eighty bushels of oats to the acre, however, have been grown under conditions as they at present exist in the valley.

Shortly after the extinction of the buffalo, lands under the canal were entirely devoted to grazing stock, but more recent experience has demonstrated that, even with the limited rainfall, they are admirably adapted for the production of small grain, and that with the application of water to the soil anything that is possible to be grown upon lands in their latitude may be successfully grown here.

During the season of 1905 two steam threshing rigs were kept busy from the close of harvest until they were stopped by cold weather, threshing the grain that grew upon these lands, and during the season of 1906 three such rigs will be kept busy as were the two the preceding season.

While the winters are sometimes severe, before the most of the water, and a considerable portion of the range was fenced, stock would graze upon the range the entire season, depending for feed and shelter upon what they "rustled," and would "come through" the winter in fair condition.

Occasionally a severe winter would put in an appearance, resulting in a severe loss of stock, but these occurred so seldom and profits accruing from this method of handling stock were so large that, despite the loss, considerable money could be made from investments of this kind.

The fencing by homesteaders of their entries, and of deeded land, and the cultivation of the soil wherever practicable, has changed all this, and the owner of stock must now provide feed for them during the winter. The application of water to the soil and the consequent extensive production of alfalfa, a legume to which the soil and climate of this section of the country seems especially adapted, off a solution of the problem of finding winter feed for stock. It is evidently safe to predict that immense areas of rough hilly land lying above the ditch, and forever incapable of irrigation, will afford an abundance of cheap summer grazing for stock.

In view of these conditions, it is safe to predict that the staple productions of this section of the country under irrigation will be primarily the same as before, viz., beef, mutton and wool, with other production added. With an abundance of alfalfa, a creamery would make a good paying investment in this section of country. A sufficient area of land will be placed under irrigation to successfully support a beet sugar factory.

Wheat yields well and is of a splendid quality. A mill might easily find a more unprofitable location than centrally under our project.

Large quantities of good brick clay insure the manufacture of brick as a profitable industry. The presence in certain localities of sufficient quantities

of sand for the successful manufacture of cement blocks assuredly make such an enterprise remunerative.

As a large amount of building will naturally be done in the settlement and development of the country following the inauguration of an irrigation system, such enterprises would undoubtedly have a large demand for their output.

Next in importance to the feasibility of irrigating a tract of land is the possibility of its thorough and successful drainage. Here again we find conditions ideal. All of the lands under the canal slope sufficiently to insure a perfect drainage, and the surface soil, which consists of a strata of considerable depth of soil of wonderful fertility, is underlaid by a porous subsoil ranging from fine sand to coarse sand and gravel in which lies a bed of pure, cold water, entirely free from alkali, at a depth of from 12 to 20 feet from the surface of the ground.

The land to be irrigated slopes gently from the canal to the river; in some instances large tracts lie nearly level. There are no steep hillsides to wash, and the work of the irrigator will be comparatively easy.

All of the land produces in its natural state a fair quantity of a very good quality of hay. When the native sod is broken and seeded to crops, its productiveness is vastly increased.

The attractiveness of the appearance of the lands under the canal is commented upon by all visitors, and fortunate indeed will be the man who owns a piece of land under the canal upon which the water right shall eventually have been paid.

LOWER MILK RIVER WATER USERS' ASSOCIATION.

This association was formed and incorporated April 28, 1905, and its present officers are: Hamilton Lee, president; R. M. Trafton, vice president; R. M. Lewis, treasurer; B. W. Brockway, Malta, Montana, secretary. The board of directors consists of Hamilton Lee, R. M. Trafton, Thomas Dignan, Charles Tanner, J. M. Nelson and H. H. Nelson.

The office and place of all meetings of the association is Malta, Valley County, Montana, and the regular yearly meeting is held on the first Monday in December.

The number of acres that will come under the Government irrigation system in the territory covered by this association is 160,000 acres, extending from the Dodson diversion dam to Glasgow, the end of the system. Of this acreage approximately 75,000 acres was filed upon prior to the passage of the Reclamation Act, either under the Homestead or Desert Acts.

There are 296 subscribers representing about 50,000 acres, all of whom were secured within 60 days from the time the books were opened, and practically all of the land would have been subscribed for if construction of the system had been commenced as owners had been led to believe it would be when the association was formed.

Since the passage of the act probably not less than 40,000 acres has been filed on under the Homestead law, leaving in the neighborhood of 40,000 to 45,000 acres of vacant land in the district.

The people of the valley have been anxious and willing to assist the Government in this matter, but are becoming discouraged on account of the delay. The contract and agreement of this association are identical with those published above.

WATER RIGHTS UNDER GOVERNMENT WORKS.

A very important ruling from the United States Attorney General's office upon two pertinent questions has been rendered which determined the amount of land for which an individual may secure water under a Government irrigation project where the unit of entry is fixed at less than 160 acres. For instance, if the unit is fixed at 80 acres, the question is, "Can the person who homesteads 80 acres, and also purchases 80 acres additional from the State, secure water from the Government works to irrigate both tracts?" The answer is affirmative.

The questions and the decision are given in full.

(1.) Whether one who has made a homestead entry not exceeding the farm unit limit, either under the provisions of the Reclamation Act or under the general law, may obtain water for such tract and also for one or more other tracts of which he is the proprietor, provided the area held in private ownership does not exceed the private ownership limit fixed by the Secretary of the Interior?

(2.) If the homestead entry was made prior to the Reclamation Act withdrawal and contains an irrigable area in excess of the farm unit limit, whether, for the purposes under consideration, the excess area is to be regarded as of the same status as land in private ownership?

The decision holds that:

"A person who has made or may make homestead entry of lands withdrawn for disposal under the act of June 17, 1902, and subject to the provisions, limitations and conditions of said act, may obtain water for such tract, and may also obtain water for one or more tracts of which he is the proprietor, not exceeding the limit of area fixed by the statute, authorizing the use of water for land in private ownership, or as fixed by the Secretary of the Interior. If the entry was made prior to the withdrawal under the Reclamation Act the entryman may be entitled to the right to the use of water for the irrigable area of the land entered and also for such area of lands held by him in private ownership which, added to the irrigable area of his entry, will not exceed 160 acres.

"While there appears to be no restriction in the act upon the rights of a homesteader to the use of water for land owned by him to the extent of area allowed to any one land owner, it has been deemed advisable to administer the law through the instrumentality of water users' associations, which are organized by the owners of land within the projects. By the contracts heretofore made with such associations by the Secretary of the Interior, only those who are or may become members of such associations will be accepted as entrymen or applicants for the right to the use of water which may be impounded or controlled by the works of such project.

"Under the articles of incorporation and by the laws of such associations which are part of every contract, every member or shareholder of the association, whether he be the owner of lands or an entryman of public lands, is restricted in his holding to 160 shares of stock, one share being allowed to each acre or fraction thereof.

"So that the Secretary of the Interior, by entering into a contract with such association, has fixed 160 acres as the limit to the right to the use of water by any one person, whether the land irrigated is entered as public land or is held in private ownership, or under both rights."

PROGRESS OF THE SERVICE.

During the four years of its existence the Reclamation Service has increased from less than a dozen men to over 400 engineers and assistants, carrying on work throughout widely scattered localities in the arid west. Contracts have been let and work is under way involving the expenditure of upwards of $25,000,000, and other contracts are being prepared which will necessitate the expenditure in all of $40,000,000. There are now working for the contractors about 10,000 men, and the Reclamation Service has working for it directly over 2,000 men, including day laborers and mechanics. The monthly expenditures aggregate about $1,000,000, having gradually increased until they are now practically the maximum. It is not probable that there will be further expansion of the work, but, on the contrary, a considerable consolidation and reduction of force as the larger works are completed. The rapid growth of the service is indicated by the annual expenditures. For the fiscal year ending June 30, 1903, these were little over half a million dollars; for 1904, one and one-half millions; for 1905, three and three-quarter millions, and for the year ending June 30, 1906, very nearly eight millions, the greater part of this amount being expended during the months of May and June, when the outlay reached over a million dollars each.

Throughout the arid states the Reclamation Service has work now under way upon twenty-two projects, and 13,600 acres of land have been actually irrigated. Up to July 1, 1906, 241 miles of main canal, 116 miles of distributing system, and 388 miles of ditches had been constructed, besides the necessary dams, headgates, weirs and reservoirs.

Tunnels having a total length of more than five and one half miles have been driven including over two and one-half miles of the great Gunnison tunnel in Colorado. More than 521 miles of telephone lines have been installed and are now in operation; 233 miles of wagon road, many miles of which were cut through solid rock in almost inaccessible canyons; 110 bridges and 300 office and other buildings have been constructed.

The works above mentioned have called for the excavation of 17,403,213 cubic yards of earth and rock, the laying of 134,446 cubic yards of concrete, and 124,901 square yards of rip-rap and paving; 42,927 linear feet of piling have been driven. There have been purchased 1,873 tons of iron and steel, 7,347,312 feet, board measure, of lumber, and 159,623 barrels of cement.

The Government cement mill at Roosevelt, Arizona, erected at a cost of more than $100,000, has turned out 43,000 barrels of cement, and United States sawmills have cut 2,889,000 feet, board measure, of lumber from the Government reserves.

THE "BEGINNINGS" OF A HOME IN VALLEY COUNTY.

CATTLE ROUND-UP CAMP.

PRACTICAL IRRIGATION.

The Bureau is indebted to Prof. Samuel Fortier, now of the Department of Agriculture, Washington, D. C., but for many years connected with the Experiment Station at Bozeman, for the following matters relating to actual conditions of private irrigation in Montana. Perhaps no other person is so familiarly competent in this connection as Mr. Fortier, ad his work is reproduced in part, with every confidence that it will prove entertaining and instructive.

In Montana large expenditures have been made in building canals, but the skill which has been exercised in conveying water has not been extended to its proper application to the soil. This is usually attributed to the fact that irrigation has not been long practiced in this State, and the time of the agriculturalist has been occupied mainly with the diversion and conveyance of water, leaving them little time to put their fields in proper condition to receive water.

This is true of many of the new districts. The settler who is striving to make a home in an arid country on a small amount of capital cannot well afford to spend $10 an acre for a water right and an additional $10 an acre in leveling, grading, and ditching his land. There is no valid excuse, however, for the people in the older irrigated sections continuing the use of the crude systems of pioneer days.

The methods of preparing land for irrigation in Montana do not differ materially even in widely separated sections. There is less tall sagebrush than in Idaho or Utah, and there is a larger and more uniform growth of native grasses. In old irrigated sections there is little unbroken land under the ditches, and the usual preparation is therefore confined to the surface of fields which have been cultivated and sown to crops for many years. Gang plows, disk plows, sulky plows, and the ordinary walking plows are all more or less used. In the work, care is taken to leave the surface as level as possible after the plow and to avoid making dead furrows. If the surface is rough, a disk harrow is used to break up the lumps. It is leveled and smoothed with one of the many kinds of home-made levelers, or with a patent leveler, and afterwards the seed is drilled in some three inches deep.

A method of preparing new land, somewhat novel in Montana, has of late been introduced in Beaverhead County. Much of the irrigable land of this county is comparatively smooth and level, and covered with low sagebrush and rabbit brush. A supply ditch is first dug across the upper end of the field to be plowed, and smaller ditches are run down the deepest slopes from this. By means of these supply and lateral ditches the new land is

thoroughly irrigated, and when the top layer of soil has sufficiently dried out to pulverize freely it is plowed, disked and leveled. The method is described by J. E. Morse, of Dillon:

"We begin irrigating as early as May 10, and thus get the use of the high water in the spring when it is abundant. Water is again used for this purpose during the fall months when it is not needed for regular crops. The land is broken up with 3-gang plows drawn by eight horses. An outfit of this kind will average about seven acres a day. Soon after plowing the corners of the field and the dead furrows are thoroughly disked. A leveler 24 feet long, made of square timbers and drawn by six or eight horses, is then drawn diagonally with the way the land was plowed. The field is again disked, in part at least, and the home-made leveler is dragged diagonally across the field for a second time, but in a different direction from the first time. This second leveling will generally put the ground in first-class condition for seeding. The field lies in a state of rest or summer fallow until the following spring, when it is seeded to oats. This work can usually be commenced in March or whenever the frost is out of the ground and the soil is thoroughly dry on top. We use a disk drill, and with four horses can seed from sixteen to twenty acres in a day. The amount of seed varies from eighty-five pounds, when sown during the first half of April, to one hundred pounds when sown in May."

In some other parts of the State where irrigation is practiced the original surface is uneven, containing what is known as buffalo wallows. It is both difficult and expensive to prepare such land for irrigation, the cost being sometimes over $10 an acre. The process of leveling involves the shifting of considerable quantities of earth. The grading, however, cannot be successfully done on fresh sod, and the usual practice of preparing land of this character is to raise first a crop of wheat without water, and when the sod is well decomposed and pulverized the grading can be done more cheaply and effectively. The removal of the top layer of soil from the high places in a field and its deposition in low places are also serious drawbacks, since the yield is much reduced on what was originally the edges of the wallows. Summer fallow and the action of frost, rain and sunshine seem to be the common remedies for these spots, and a heavy coating of manure is also beneficial.

Perhaps the most common mistake to be found in supply ditches is the steep grades on which many of them are built. In pioneer days water was conducted along plow furrows running down the steepest slope. A channel of this kind, although small at first, was gradually increased by erosion until it finally became, in the majority of cases, a wide, deep chasm. These unsightly channels detract from the appearance and value of a farm, and cause the waste of much water from seepage. The most obvious remedy is to change the location; but this cannot easily be done, for the reason that the rights of way for such water courses have become vested in one or more owners, and the location cannot be changed to one of less grade without an abandonment of the old and the purchase of a new right of way. In such cases, and for volumes not exceeding 200 miners' inches, the writer has rec-

ommended the use of tile pipes laid at least one foot below the surface to permit cultivation. The value of the crops that can be raised on the land occupied by such ditches will in a short time pay for the tile pipe. Other possible remedies are a change of location or paving the channel. Again, it not infrequently happens that the supply ditch first built fails to furnish water to the whole farm. This may be due to its small size or its location is too low to cover the higher ground. The remedy, always costly, is to build a second feed ditch, and either abandon the first, or operate and maintain both.

Still another mistake which is common to this and other States is the location of ditches wtihout any regard to drainage. Water is frequently forced from a lower to a higher point along the border of a field by the construction of levees which interfere with and tend to choke the natural water courses. The consequences are a water-logged soil, the rise of alkali, and unprofitable yields.

FARM LATERALS.

These small ditches receive water from the supply ditch and distribute it over the surface. On grain fields the field laterals are run after the crop is seeded, and usually when it is a few inches above the ground. In the majority of cases these furrows are run by eye from the bordering ditch at varying intervals. Regarding the direction of the furrows, there are two well defined methods practiced in the State. In one the laterals are located either on straight lines and extend more or less diagonally across the field. In the other the head ditch is located across the upper end of the field and the laterals are run at right angles from it down the steepest slope. When the surface of the ground is smooth and level, and the laterals carefully run on a grade of 0.5 to 0.75 inch to the rod, the first is preferable.

Sometimes large quantities of fine sand or other material are carried down the supply ditch and choke up the small field ditches on slight grades. In cases of this kind the lateral on a steep grade preserves a clear channel and the sand is flushed out on the surface of the field.

The distance between field laterals varies from about seventy feet in grain to one hundred feet in hay fields. A fourteen or sixteen inch lister plow attached to a sulky frame is the implement most commonly used to make laterals. The furrows are cleaned out by a large shovel plow called a "dammer," which deposits piles of earth in the laterals at intervals of forty to one hundred feet, depending on the grade.

Objections are made to the presence of so many laterals, particularly in a grain field. At first thought it would seem that the occupying of space by laterals lessens the yield to the extent of the surface not under crop. In accordance with this idea some men space the laterals far apart in order to effect a saving. As a matter of fact, nothing is gained by a wide space of one hundred and fifty feet between the laterals, for the head of water generally used cannot be spread evenly over so wide a belt. The result is uneven distribution and consequent loss of crops.

Careful observation shows likewise that the yield is seldom much lessened by the presence of laterals for the following reasons:

They increase the circulation of air and the amount of sunshine in a field bearing a medium or heavy crop, and they increase the yield along the lower edge of the lateral by sub-irrigation from the bed of the channel and by furnishing a top dressing of soil to nearby plants.

The cost of leveling fields that have been cultivated for a number of years and making the laterals, varies from ten to seventy-five cents an acre, depending on the character of the soil and the degree of thoroughness with which the work is done.

A brief description of the methods adopted and the average cost of such work from a few of the most successful irrigators of Montana are given.

Cost of Preparing Land for Irrigation.

Description of Methods Used	Cost an Acre	Name and Address
Land leveled, ditches made, and manure dams put in (1st year 50c.)	$0.20	F. L. Benepe, Bozeman.
Land thoroughly leveled, laterals made with lister, and dams made	.75	P. Bergland, Manhattan.
Land gone over with 4 horse leveler, and laterals made with disk plow	.20	J. A. Lovely, Livingston.
Land leveled, laterals made with ditch plow, and earth and manure dams put in	.75	G. M. Fuller, Bozeman.
Land leveled, laterals and dams put in	.50	H. Monforten, Bozeman.
Head ditches plowed after sowing, and dams made with dammer	.25	E. C. Kinney, Bozeman.
Laterals made with 16-in. lister and dams made with dammer	.55	William Frank, Belgrade.
After cropping field leveled and laid off in lands about 15 yds. wide, laterals made by throwing a furrow each way and running a wedge-shaped opener through them	.08	J. E. Kanouse, Townsend.
Main ditch plowed and dirt pushed out with scraper, laterals made with lister and manure dams put in	.10	John Holliday, Livingston.
Furrows plowed 60 feet apart, furrows cleaned and dams made at same time dammer	.05	W. H. Sales, Salesville.
Laterals made 6 or 7 inches deep with 16-in. lister, and dams made with dammer	.75	W. R. Bell, Central Park.
Land leveled and laterals made by throwing furrow each way and running a crowder through the ditch	.25	P. Kircher, Clyde Park.

CHECKS IN LATERALS.

Reference has been made to dams of earth made by a dammer. These are confined principally to grain farms. The most common kind of check for both grain and hay lands is a base of half-rotted straw or coarse stable manure, covered over with a thin layer of earth. The manure is distributed in small heaps along the lateral, the space between the heaps varying from thirty to eighty feet, according to the grade. Before irrigation it is arranged so as to form a more compact check, and thin coverings of soil are usually placed over the up-stream slopes. During the process of irrigating these checks are thrown out on the edge of the bank, leaving the channel free for the passage of water as far as the next check below. In alfalfa or other hay fields, some form of canvas dam is generally used. Some prefer to use ma-

nure for checks in the smaller laterals, and canvas aprons for the larger ones.

In other districts wooden or steel portable checks are used for the small ditches in the grain fields, and canvas for the supply ditches.

AN IRRIGATION STREAM.

It is the prevalent opinion in Montana among experienced irrigators, that one competent man will handle one hundred miners' inches in irrigating grain, and a considerably larger stream in irrigating clover, alfalfa, or native meadow land. This head of water, if applied on six and two-thirds acres, would cover it to a depth of nine inches in twenty-four hours; or it would cover two and three-quarter acres to the same depth in ten hours. It is only in rare cases that irrigators remain in the field at night. The stream is controlled by day, but before quitting time in the evening it is turned on some meadow or hay field to run without attention until morning. The result of such practice is to be seen in a low duty of water, diminished yields, and in time the water-logging of soil and the creation of marshes. As land increases in value and as irrigation methods improve, the enormous waste of water caused by permitting an irrigation stream to flow over a field for tyelve hours without guidance will be stopped. The division of the present large farms into smaller holdings and the production of a larger variety of crops will tend to introduce important changes in the use of water.

COST OF APPLYING WATER.

The cost of applying water depends on a number of conditions. In the short season of Montana, some grain crops are irrigated but once. Other crops, such as alfalfa, clover, and native hay, may be irrigated three and four times. The size of the stream used also makes a difference in the cost, since the acreage watered in a day is usually in direct ratio to the head used. In addition there are to be found all kinds of surfaces and subsoils, and some fields have been carefully prepared, so that little difficulty is experienced in spreading water evenly. Others are uneven and poorly graded, with faulty supply ditches.

At the same time some idea of what it costs each season to irrigate a crop is highly desirable, not only for the Western farmer, but especially for those who intend to take up farms in irrigated portions of the West.

As far as Montana is concerned, it was thought that the most reliable information on this subject might be obtained from the irrigators themselves. Inquiries were addressed to a few of the most prominent of each community, and it was hoped their replies would apply in a general way to the entire community. The figures given in the following statement represent the average of sixty-seven replies received from irrigators in different parts of the State.

Irrigation head used by one irrigator, miners inches	163
Number of acres irrigated by one man in one day	5
Cost of one irrigation, per acre	$0.44
Cost of season's irrigation, per acre	1.07

An idea of the methods employed may perhaps best be conveyed by a

brief description of the irrigation of two staple crops in different parts of the State viz., a grain crop grown in the Gallatin Valley, and an alfalfa crop grown in the Yellowstone Valley.

IRRIGATING BARLEY IN GALLATIN VALLEY.

The land for a crop of barley in the Gallatin Valley is usually plowed in the fall just after harvest and is permitted to lie without further cultivation until the following spring. About the first of May the surface is usually dry and it can then be leveled, harrowed, and seeded.

In that section the average rainfall for the two months April and May is nearly 4.5 inches, enough for the needs of the plant until it is five to seven inches above ground. The barley crop reaches this stage the latter part of June and is then ready for the first irrigation. Assuming that the head ditch is already constructed and properly cleaned out, the first thing to be done is to mark out the laterals and furrow them out with a ditch plow. The marking out is often omitted, but when done the grade allowed in fields that have been carefully leveled is about 0.5-inch to the rod or, when a 100-foot chain is used, 0.2-foot to the chain. The laterals are spaced sixty to eighty feet apart, the narrower space preferred. Each one connects with the head ditch and is terminated about fifty feet from the lower border of the field. A dammer drawn by one horse follows the ditch plow and forms the earth checks, which are spaced about sixty feet apart. Canvas dams provide the most convenient check for the head ditch. By their use a stream of seventy-five to one hundred and twenty-five miners inches is divided between two neighboring laterals and the small areas lying between the supply ditch and the first checks are irrigated. The checks of earth are then broken with a long handled shovel and the water flows in each lateral until it encounters the next check, where it is held until the next space is irrigated. In this way each of the strips lying immediately below each lateral is watered. A thorough irrigation consists in saturating the soil to a depth of one foot, and in some seasons one irrigation will suffice, while in dry years two waterings usually produce the largest yields.

Sometimes the second irrigation is light, only part of the full supply required to saturate the soil being used. A volume of water equal to a depth of six inches spread evenly over the surface is usually sufficient, when there is no waste, for one thorough irrigation.

When the land is uneven or not properly leveled, or when it is broken up by ravines, there is usually considerable waste and it may require nine to twelve inches in depth over the surface for one irrigation. Seldom more than half the quantity is used for a second irrigation.

The first irrigation should be applied early enough to have the soil ready for the second application before the heads become too large and heavy.

A large volume of water applied three weeks before the grain is cut may prove more injurious than beneficial, as the weak stems in the soft soil are not capable of supporting the heads in an upright position. Several days after the last irrigation the laterals are filled in and levelled in order not to

obstruct the reaper. This may be done by the use of a small walking plow, or by means of a special implement containing two disks, which throw earth to the center and fill the ditch.

Cost of irrigating 40-acre barley field, leveling, ditching and checking, at 75 cents an acre	$ 30.00
Value of water used, at $1 per acre	40.00
Applying sufficient water to mature crops, at 85 cents	34.00
Leveling laterals, at 7 cents	2.80
Total	$ 106.80
Gross returns from barley, 58 bushels at 50 cents	$1,160.00
Balance	$1,053.20

IRRIGATING ALFALFA IN YELLOWSTONE VALLEY.

Alfalfa being a perennial plant, the annual cost of plowing, cultivating, and seeding is saved. There is, however, more urgent need for thorough preparation at the time the crop is put in, since an uneven surface or badly located ditches may materially diminish the yield of every crop for a long period of years. The loss, from any one of these causes, of one hundred pounds of alfalfa to the acre at each of three cuttings would amount to nine dollars an acre in twelve years, but such causes frequently reduce the yield to the extent of half a ton an acre, when the loss in the time named would amount to $108 an acre or about double the present value of alfalfa land. In preparing a field for alfalfa it is better to plow in the fall. It is then evenly graded and cultivated in the following spring as early as the ground is sufficiently dry to work and the seed drilled in to a depth of about three inches. The quantity of seed sown to the acre in the Yellowstone Valley averages about twenty-two pounds. Many prefer to plow the laterals before seeding and to run the seeder as close as possible to the edge of the ditch. This prevents, for a time at least, the growth of alfalfa in the ditches.

Young plants are tender at first and require moist soil for a seed bed until the roots strike into subsoil that is continually moist. They are also liable to be choked with weeds. This can best to prevented by running a mower over the field with the knife set high. By this process the weeds are cut and make mulch, which prevents the soil from baking. The tops of the spindling alfalfa stems are likewise cut, which causes it to stool out and thicken.

In alfalfa fields, or other grass crops, the laterals should be located with an engineer's level or by some good substitute. The grade may vary from 0.2 to 0.3 foot in 100 feet, and the laterals may be spaced 75 to 125 feet apart. For a permanent crop of this character it pays to construct wooden checks and division boxes in the supply ditches. When it is found necessary to divide a stream into two or three smaller heads a divsion box is convenient. The cost of a box of this kind is often refunded the first season in the lessening of the labor bill.

Old alfalfa fields are irrigated from one to four times during the period

of growth. Three crops are obtained from the same field in one season, and as a rule each crop is irrigated. One man handles from eighty to one hundred and twenty-five miners' inches. The laterals are somewhat larger than those found in grain fields, and the water is checked by canvas dams. The proper time for each irrigation and the proper amount of water to apply are questions that have not been definitely settled. Too little water diminishes the yield, and too much injures the soil by bringing up the alkali. Between these two extremes there is usually some middle course which will produce the best results. For the past three years the average amount of water used by the farmers under the Big Ditch, in Yellowstone County, has been forty-one inches in depth over an area aggregating 18,000 acres.

This includes all losses of all kinds, but making a liberal allowance for waste there would remain about thirty inches, or ten inches depth for each of three irrigations.

As to the proper time to irrigate, the first application should be made before the crop begins to suffer, as it is too late when the plants begin to show signs of draught. As regards the proper time to irrigate the second crop opinions differ, but it is a common practice in Utah to irrigate just after taking off the first crop. The majority claim that on the large farms of the Yellowstone Valley it is not practicable to remove a crop in the forenoon and spread water over the surface the same day. They contend that so much time elapses between the cutting of the alfalfa and the irrigation of the stubble that the latter is badly injured and takes a long time to recover after being watered. Those who hold this view prefer to apply the water before the crop is cut, allowing sufficient time for the soil to dry out before cutting.

COST OF IRRIGATING A FORTY-ACRE ALFALFA FIELD.

Interest on cost of preparing the land, at 50 cents an acre	$ 20.00
Repairing and cleaning out laterals, at 25 cents an acre	10.00
Cost of water used at $1.50 an acre	60.00
Cost of irrigating three times at $1.25 an acre	50.00
Total	$ 140.00
Gross receipts from three cuttings, 6 tons at $5.00 a ton	$1,200.00
Gross receipts less cost of irrigating on 40 acres	$1,060.00

DUTY OF WATER IN MONTANA.

Montana is a large state, but the bulk of its agricultural products will always be raised on comparatively small areas, because of a limited water supply. This being true, the duty that can be secured from available water will measure to a large degree the future possibilities in agriculture. For this reason the study of the duty of water and the conditions which influence it assume great importance.

If it is desired to reclaim an arid tract of land the engineer must decide not only upon the total quantity required for the season, but also the max-

imum amount to be delivered at any one time. Having decided as to the largest volume of water required for any given period, he designs the canal structures accordingly. If this estimate is too large, a part of the money of the investor will serve no useful purpose. On the other hand, if the estimate is too small, the enterprise will be a partial failure, for there will not be sufficient water to irrigate all the land. Similarly, when water is to be stored to irrigate land, the capacity of the storage reservoir and the cost of the structure are both dependent to a large extent on the service which the stored water will perform when applied to the soil. There is the same necessity for accurate information on this point when a pumping plant is to be installed. Otherwise money will be wasted in the purchase of a plant of too large capacity, or else the plant first installed will be too small to raise the requisite amount of water and will have to be replaced by one of greater capacity.

Thus it is evident that from an engineering standpoint a knowledge of the amount of water required for land of a known character and for particular crops, is necessary. Such knowledge is all the more important when one considers that about 80 per cent of the irrigable lands of Montana are yet to be reclaimed. Judging from the progress made during the past fifteen years, the extent of land reclaimed in the next fifteen years by private enterprise will amount to 1,750,000 acres. If this area is increased by a third of a million acres of Government land which it is presumed will be reclaimed by the Reclamation Service, it will increase the amount to more than 2,000,000 acres. There is perhaps no question of more vital importance to the future of Montana than a knowledge of the right amount of water to apply, not only to the land which may be irrigated in the next fifteen years, but to all the irrigable lands.

When one considers the broader features of this subject, which pertain to the equitable allotment and distribution of water, its importance is much increased. The basis of all equitable allotments must rest on the amount of water required to properly irrigate land. This question thus becomes one of the main factors in the determination of rights to the use of water. Even after rights have been established, the proper duty of water is still the cause of much dispute between those who regulate, control, and administer the public waters of a stream, and the farmers who use the water.

The ordinary irrigation channel receives much more water from the stream than it delivers to the irrigated fields. Porous soil and a high summer temperature causes loss in conveyance in the main channels, seldom less than ten per cent, and rising occasionally to over fifty per cent of the total volume diverted. The flow, after it is turned into the laterals, is subjected to still further reduction in volume from the same causes, so that in stating the quantity of water used on a tract of land it is important to locate definitely the place of measurement. When the stream is measured as it crosses the highest boundary of a field there is practically no loss in conveyance. When, however, the water is measured at the point of diversion from the natural channel, all losses due to seepage, evaporation, and leakage are in-

cluded, and this shows a much larger quantity used. Rainfall, mid-summer temperatures, and the length of the irrigation period all modify the quantity of water required. In Montana all three conditions are favorable from the standpoint of the economical use of the water supply. he average annual precipitation over the cultivated portions of the State is over fourteen inches, and a large part of this occurs in April, May and June, when farmers need moisture most to start their crops. In the Gallatin Valley in particular the rainfall during these three months is fully equal to one irrigation, and forms about thirty per cent of the average amount of water received by fields under careful irrigation. The evaporation is likewise low during the time when water is applied. The average weekly evaporation from a water surface at Bozeman, for the past four years has been 0.94 inch for the months of May, June, July and August, much less than it is in the more southerly and warmer portions of the arid region. For the same reason the period during which water can be used is comparatively short. In some parts of the State, water is applied in April and May, but, taken as a whole, ordinary crops receive the greater part of the season's supply from May 15 to August 15. The average length of the irrigation period in Montana does not exceed one hundred days.

Water can seldom be used economically on a one-crop farm, and this is particularly true of the cereals. If one's holding is all planted to wheat, for example, a large flow may be required for a short period, but when the needs of this one crop are supplied the owner may have no further use for the irrigation stream. In growing alfalfa, or any other leguminous crop, under irrigaton, it is possible to get a higher duty from the water supply, for the reason that two or three crops may be grown on the same field in one season. A farmer who is entitled to the continuous use of one cubic foot per second for eighty acres, may thus be able to supply water to three crops of alfalfa at the same cost as to one crop of wheat.

In doing this he may use more than three times the amount of water, but, assuming that he pays season rates, the cost would not differ.

It is only, however, on the diversified farm that a continuous stream can be utilized to the fullest extent. When a dozen different crops are grown on an eighty-acre farm the proper time to irrigrate is seldom the same for any two, and so it is possible to keep a small stream flowing continuously on first one and then another of the sub-divisions. On account of the large size of the average farm and the plentiful supply of water, the necessity for time rotation in the delivery of water has not been keenly felt in Montana up to the present. It is only when a scarcity exists that neighbors arrange to use in turn the supply which belongs to, say, three proprietors. In this way each of three farms can secure an effective irrigation head for one out of every three days. As water becomes scarce and of higher value and as the farms become reduced in size, this method of delivering water will become more common.

The subsoils of western land when first brought under irrigation contain little moisture. The most striking characteristics of these formations

are their great depths and the close similarity which exists between the surface and the subsurface layers. Apart from their darker color, due to decayed vegetable matter, there is little to distinguish top soils from bottom soils, and the roots of plants extend to great depth through the latter. On account of these prevailing physical features a large part of the water which is applied for the first few seasons is absorbed. Cases are common in which new land has absorbed in one season a quantity of water which would have covered the surface to a depth of six feet. To claim that this large volume represents correctly the duty for such land is a misrepresentation, because the open space in the subsoil is gradually filled with water, and the ground water level in time rises nearer the surface. It is a fact, however, that new land requires more water per acre than old cultivated fields, and crops are likely to suffer if it is not applied.

Other conditions being similar, less water will be used on a farm which has a good system of ditches and laterals and a well-cultivated, even surface. The beginner is not always well posted as to the best way to lay out and build farm ditches, and he may not possess sufficient means to properly prepare his fields for irrigation. These defects invariably prove quite costly in the end, when measured in waste of water and small yields. In an arid country thorough cultivation serves a double purpose in that it increases the yield and prevents the escape of water into the atmosphere.

Grading or leveling the surface is even more important, since it is difficult to apply water to an uneven surface, the growth of the crop is not uniform, and the soil in the low places is likely to be damaged by an excess of water.

The time necessary to mature plants differs. Under favorable conditions a crop of alfalfa can be grown in less than fifty days, a crop of barley in something over a hundred days, while it may require one hundred and fifty days to ripen certain varieties of fruit. There is not only a difference in the period of growth, but also in the number of crops grown in one season. The way in which water is applied is perhaps as important as the quantity used. Some soils bake after being flooded and furrow irrigation must be used for all crops. Other soils are so porous that furrow irrigation is not practicable. In irrigation by flooding, as generally practiced in Montana, care is usually taken to distribute the water during the day, but it is left unattended at night. Fully twenty per cent of the available water supply may be wasted while the irrigator sleeps or is off duty.

A part of the Gallatin Valley is underlaid by coarse gravel and cobbles, and a large percentage of the water applied to the surface sinks into these porous materials and drains down the valley. Other portions are undulating, which renders the application of water somewhat difficult.

In the Bitter Root Valley much of the fruit soil is light and porous, and is located for the most part on steep slopes. For these reasons the amount of water used is somewhat above the average. Along the Milk River Valley the slope is flat and the soil somewhat heavy. These conditions favor a high

duty, and when this part of the State is developed it is expected that a cubic foot of water a second will be sufficient for 100 acres. It frequently happens that fields which have received large quantities of water produce low yields. This result may be due to one or more of a large number of causes. Chief in importance is the proper cultivation of the soil. It may be regarded as one of the fundamental truths in agriculture that irrigation cannot take the place of cultivation. The western irrigator has been slow to recognize this fact, and is still inclined to depend too much on irrigation and too little on cultivation. As a rule, in Montana the larger and most profitable yields are obtained from the use of a moderate amount of water. The people of Gallatin Valley, who produce the largest grain yield of the State, use the least amount of water for irrigation.

Throughout the most productive regions of the State sufficient water is diverted to cover the land watered to depths varying from three to five feet but since a large percentage is lost in transit the volume which reaches the field would not cover them to depths greater than twenty to forty inches in a season. There are other portions where water is so cheap and plentiful that the owners are careless in its use. They open the head gates and permit a large stream to flow for days at a time without much, if any, attention. Men who use large quantities of water, covering their fields to depths of from four to ten feet every season, are usually the most careless in preparing the land or in cultivating the surface, and the result is without exception a small yield.

That yields do not depend wholly on the amount of water applied is shown clearly by the records. An oat field which received over six feet of water in two irrigations produced only thirty-seven bushels an acre, while a field which received in one watering less than seven inches produced seventy-five and one-half bushels. The largest yield from eight fields tested was eighty and one-third bushels an acre, which received 1.04 feet of irrigation water, and 0.64 foot of rain water. Similar results were shown on six wheat and eight barley fields. In nine clover fields the largest yield was from the heaviest watering, but, on the other hand, the next largest use of water produced a small crop. It is important to remember that the crops mentioned above were grown in different seasons, in different parts of the State, and in many cases under a wide diversity of soil and climate. In view of these facts, the records as given should not be used to base final conclusions as to the proper amount of water to use in raising these staple crops. They do show, however, that when other conditions are favorable it is possible to obtain a large crop with a small amount of water.

UNITS OF MEASUREMENT.

In the measurement of water several units are in use to state the quantity of water, the term "miners' inch" being in most general use, as more familiar and better understood than the term cubic foot per second.

Prior to 1885 Montana had no legal standard for measuring water in mo-

tion but in that year the legislature enacted the following somewhat imperfect description of a measuring box:

"Sec. 1262. The measurement of water appropriated under this chapter shall be conducted in the following manner: A box or flume shall be constructed with a head gate placed so as to leave an opening of six inches between the bottom of the box or flume, and the lower edge of the head gate, with a slide to enter at one side of and of sufficient width to close the opening left by the headgate, by means of which the dimensions of the opening are to be adjusted. The box or flume shall be placed level and so arranged that the stream in passing through the aperture is not obstructed by back water or an eddy below the gate, but before entering the opening to be measured the stream shall be brought to an eddy and shall stand three inches on the head gate and above the opening. The number of square inches in the opening shall be the measure of inches of water."

For thirteen years the miners' inch box just described was the only legal means of measuring irrigating water, and all court decrees which were rendered from 1885 to the spring of 1898 and which deal with specified volumes of water used in irrigation are expressed in Montana statutory inches. While a new standard unit has been adopted, the old unit cannot be said to be wholly abolished. Parties whose rights to the use of water were established during this thirteen-year period, have been granted the privilege of having the quantity of water to which each is entitled, measured by the miners' inch box.

Since 1898 the standard unit in Montana for the measurement of water in motion is the cubic foot per second often abbreviated into the two words, second-foot. This is a solid or cubic foot of water, moving at the rate of a lineal foot in one second of time. Each foot in length of a flume one foot wide and one foot high, inside measurement, and flowing full of water would contain a solid or cubic foot of water. Now, if this flume were placed on such a grade that the average rate of flow of water within it would be just one foot of distance for each second of time, it would carry a volume equal to the standard unit. Forty miners' inches are the exact equivalent of one second-foot, and the volume of one miners' inch is equal to 0.025 cubic foot per second.

The miners' inch and the second-foot can only be used to measure water in motion. Since it is often convenient to describe a certain quantity of water in a state of rest, the acre-foot has been quite generally adopted for this purpose. It means the amount of water that will cover one acre to the depth of one foot, or 43,560 cubic feet, or 325,851 United States gallons.

DUTY OF WATER IN COURT DECREES.

Since the rights to the use of water can only be determined by the courts as the result of litigation, and since water is the chief factor in the agricultural development of the State it may add to the value of this report to review some of the decisions of these tribunals in which parties have been granted rights to the use of fixed volumes of water from the public streams.

Only a small percentage of the total number of people who use water have had their rights thus defined, but in every county where irrigation has been practiced for some time controversies over water have arisen and the majority of these controversies have culminated in court deecisions which are on file in the recording offices of the respective counties. Some of these decisions are so indefinite as to possess little, if any, value in a discussion of this character. One party, for example, may be decreed a certain number of miners' inches of water from a particular stream, without reference to the extent or location of the land which such water is intended to irrigate. To another party may be decreed a certain fraction of all the flow of a creek, with or without reference to the area which such fractional part may irrigate. It is only where a definite number of miners' inches have been decreed to a stated number of acres that use has been made of decisions in compiling the following tables.

DUTY OF WATER IN COURT DECISIONS IN MONTANA.

Name of Stream	Date Decree	Miners Inches of Water	Acres of Land
Carbon County—			
Sage Creek	Jan. 7, 1901	565	495
Cole Creek	May 14, 1902	720	720
Red Lodge Creek	July 21, 1904	6,683	6.683
Rocky Fork Creek	Aug. 21, 1903	51,916	51,886
Blue Water Creek	Feb. 29, 1904	2,466	2,456
		62,350	62,250
Ravalli County—			
Eight Mile Creek	May 27, 1897	930	1,353
Lost Horse Creek	June 14, 1898	39	160
Barnaby Creek	Oct. 17, 1898	302	480
Larry Creek	Oct. 17, 1898	257	280
Mill Creek	Mar. 9, 1903	2,903	4,249
Fred Burr Creek	Mar. 10, 1904	3,009	5,713
Sleeping Child Creek	Mar. 3, 1904	640	620
Total		8,230	12,855
Gallatin County—			
East Gallatin River	Apr. 2, 1892	2,614	2,623
Missoula County—			
Carlton Creek	Feb. 21, 1902	1,957	3,477
Rattlesnake Creek	July 9, 1903	1,803	3,869
Total		3,760	7,346
Sweetgrass County—			
Bridger Creek	Mar. 18, 1898	455	880
Spring Creek	Nov. 17, 1899	300	320
Big Boulder River	Feb. 16, 1901	400	320
Big Boulder River	Feb. 19, 1901	700	625
Duck Creek	Feb. 19, 1901	450	1,400
Otter Creek	June 25, 1903	675	1,440
Duck Creek	June 25, 1903	2,386	6,032
Total		5,366	11,017

These summaries show that 82,320 miners' inches of water have been decreed to irrigate 96,091 acres of land, or at the rate of one inch to 1.17 acres In Carbon County during the past three years 62,350 miners' inches have been granted for the purpose of irrigating 62,250 acres, or slightly more than one miners' inch an acre, or one cubic foot per second for each forty acre tract. This would require a continuous flow for about eighty-two days to supply a depth of 4.1 feet, which is the average of all measurements taken. The court decrees, therefore, correspond approximately to general practice.

LOSSES IN CONVEYANCE OF WATER.

The principal losses which occur in conveying water from a stream or other source of supply to the place of use may be grouped under one or the other of three heads. These are leakage, evaporation, and percolation.

The loss due to leakage is readily traceable to faulty construction, and can be remedied only by better structures and the exercise of higher skill in building canals. The wooden flumes to be found on nearly every canal are the chief source of leakage, and some of them leak so badly as to endanger their safety. This can be remedied by using a better grade of lumber and building the flumes in such a way as to insure water tightness. In many cases the best course to take with an old wooden flume is to substitute for it something more permanent. This has been done by the officers of the Big Ditch in Yellowstone County. When this canal was first built many wooden flumes were used to cross depressions. In time these structures decayed, but instead of having them replaced the superintendent built earthen embankments on each side, which greatly lessened the loss of water and cheapened maintenance, besides being permanent.

Leaks are sometimes caused by the shattering of rock or other material by blasting during construction or by failing to provide impervious connections between canal embankments and the original surface. Another source of loss is leaky gates. A slight leakage from the closed headgate of a farmer's lateral is a trivial matter, but the combined loss from a score or more of badly fitting gates may amount to a considerable volume of water.

The principal loss of water by evaporation occurs after the water is spread over a field and not while it is being conducted in canals. During the early part of the irrigation season in Montana the temperature of water in canals is quite low, often between 50 and 60 degrees F., and evaporation in consequence is low The results of careful experiments for a period of four years the average weekly evaporation from May 1 to September 30, amounts to a trifle more than 0.9 inch per week, and this figure is taken to compute the loss of water by evaporation from typical canals, the table showing the results in ten.

AMOUNT OF EVAPORATION FROM TYPICAL CANALS IN MONTANA.

Number of Canal	Discharge		Width of Surface	Evap. per mile of Canal	Number of Canal	Discharge		Width of Surface	Evap. per Mile of Canal
	Cu. ft. per Second	Miners inches	Feet	Miners inches		Cu. ft. per Second	Miners inches	Feet	Miners inches
1	6	240	5	0.13	6	110	4,400	25	.65
2	12	480	6	.15	7	200	8,000	31	.81
3	25	1,000	9	.23	8	300	12,000	40	1.04
4	40	1,600	12	.31	9	400	16,000	47	1.22
5	70	2,800	20	.52	10	600	24,000	58	1.51

It has been considered desirable to give a reasonably close estimate of the loss by evaporation from typical canals in order to correct a false idea which is prevalent regarding it. It is not unusual for irrigators to hold that the greater part of the losses which occur between the intake and their fields is due to evaporation instead of to seepage. Now, the computations show that this loss even in large canals is not worth reckoning with. A canal, for example, twelve feet wide on top and carrying 1,600 miners' inches, loses less than a third of a miners' inch to the mile, while one forty feet wide and carrying 12,000 inches loses a trifle more than one inch.

In measurements that have been made to determine the losses in the transportation of irrigation water, few attempts have been made to separate the volumes lost in different ways. It has been previously shown that the amount evaporated is small in comparison with the total loss. In canals that are skillfully maintained and operated the loss due to leaks is likewise small. It is apparent, therefore, that by far the greatest loss arises from percolation or seepage. The results given in the table which follows include loss from all sources, the greater part of which is, as just stated, from seepage. The canals tested were usually representative of the larger class in the district. After one had been selected the necessary arrangements were made with the superintendent before the date fixed for beginning the test. A gauge rod of some kind was inserted near the intake and the discharge ascertained by means of a current meter. The person in charge of the headgates was then instructed to hold the water at the same height during subsequent measurements. The field party then traveled down the canal, measuring each diversion and each inflow as they passed it. At some suitable point on the canal, usually at a road crossing, the canal was measured a second time. The difference between these measurements, provided there were neither diversions nor inflows, represented the loss in transit between the points of measurement. In case there were diversions through laterals or inflows from creeks or other sources, the canal was debited or credited, as the case might be, with the respective amounts. All measurements of main canals were made with current meters in the customary way, and as a rule all lateral diversions were measured over weirs or with current meters. The results of all measurements made are summarized in the following table:

Losses From Canals by Seepage and Evaporation

Name	Date	Length measured	Flow at upper end	Loss	
				Cubic feet per second	Per Cent
		Miles	Cu.ft. per sec.		
Yellowstone Valley:					
Big ditch	August 9-13, 1900	22.00	254.47	65.05	25.56
Do	June 10-13, 1902	33.90	310.77	47.11	15.16
Do	August 4-6, 1902	30.40	300.65	29.07	9.25
Do	1903	28.86	382.92	12.20	3.19
High Line canal	....do	18.51	75.20	20.34	19.29
Yellowstone ditch	....do	7.00	35.60	6.89	19.35
Italian ditch	....do	9.62	50.60	—2.70	—5.04
Canyon Creek ditch	....do	12.00	59.72	10.76	18.02
Mill ditch	....do	8.00	29.33	1.78	6.07
Flaherty Flat ditch	....do	3.00	21.28	1.17	5.25
Merrill ditch	....do	8.25	30.81	5.26	17.07
Gallatin Valley:					
West Gallatin Irrigation Company	July 18-20, 1900	38.75	114.45	39.06	34.13
Do	June 24-25, 1902	26.50	93.67	26.31	26.66
Do	1903	23.25	70.08	18.80	26.82
Cameron ditch	....do	7.82	26.48	7.60	28.17
Farmers' canal	1900	10.75	133 10	23.59	17.65
Kleinschmidt	1903	17.50	96.11	10.24	9.65
Bitter Root Valley:					
Republican canal	1900	11.60	120.49	35.35	29.34
Do	1902	12.00	65.52	18.16	27.71
Do	1903	5.25	88.11	6.83	7.75
Do	....do	9.75	76.46	6.09	7.96
Hedge canal	1902	17.75	80.83	16.08	19.90
Do	1903	17.50	99.96	3.24	3 03
Ward ditch	1902	7.40	55.32	2.00	3.62
Do	1903	8.00	35 09	7.82	20.53
Skalkaho ditch	1902	5.96	37.92	5.07	13.39
Do	July, 1903	5.50	29.32	3.09	10.54
Do	August, 1903	5.50	32.58	1.18	3.62
Surprise ditch	1902	5.00	51.20	18.61	30.84
Supply canal	....do	14.00	60.90	40.56	66.60
Allen, Hughes, et al	1903	1.25	8.32	1.80	21.63
Fowler and Sistah ditch	...do	3.00	7.23	1.61	22.27
Union ditch	...do	6.00	38.49	3.13	8.26
Average					18.22

It should be borne in mind that the loss shown in the table is the net loss, as most canals receive more or less inflow from above. In one case this was so great that the canal showed a net gain. Again, the portions of the canals measured represent only a part of the total loss by seepage in the conveyance of water from the natural stream to the irrigated fields. No attempt was made to determine the losses in the network of laterals which take water to the boundaries of the fields.

CONCLUSIONS AND RECOMMENDATIONS—WASTE OF WATER.

According to the author's estimate the total area that is ever likely to be irrigated in Montana from streams, reservoirs, and wells, will not exceed 6,000,000 acres, while the fertile and arable land that might be irrigated may comprise three times this area. The reason of this low estimate is the smallness of the water supply, the short period of plant growth, and the fact that the large tracts of irrigable land are not always accessible to the large streams. This estimate was based on an average supply of two acre feet of

water for each acre of land, which may be regarded as the minimum quantity required under the most economical use which is to be expected.

The average quantity diverted for each acre irrigated is 4.1 feet, or more than twice the quantity used in this estimate, and insofar as rights have been adjudicated, the courts have confirmed rights to this quantity. The difference between these quantities represents the possible extension of the irrigated area of Montana, after the streams are exhausted under present practice. Measurements of return seepage show that at least a part of this water drains back to the streams to be used again, but undoubtedly a large part of this excess is lost by evaporation when spread over the ground, and by percolation into substrata which does not drain back into the surface streams. Further, the water thus wasted is likely to injure either the land to which it is applied or that lying below. This necessitates drainage to protect land against water-logging and alkali. The two great sources of loss are poorly constructed ditches and careless irrigation. Middle Creek Canal, in Gallatin County, may serve as an illustration of the waste of water in ditches. It was begun in 1871 by a small association of farmers who had neither sufficient means nor the necessary equipment to build a good canal. The ditch was located with a spirit level fastened to a tripod. Each stockholder was required to provide a certain number of men and ox teams and to perform an amount of labor proportionate to the number of shares of stock which he owned. Thus this badly located canal was built at odd times in a haphazard way. Questions of grade, of suitable materials, or of loss by percolation did not worry these farmers; their main object was to get water to their ranches, and if a few plow furrows served their purpose they were content.

Under the conditions which then existed the members of this pioneer co operative association may have pursued the proper course. Water was then cheap and fairly plentiful, the new settlers were poor, and it might have been unwise to spend more money on the canal at that time. But thirty-five years have changed conditions about Middle Creek. Many of the first settlers who began without means have since become well-to-do; comfortable farm dwellings have taken the place of log cabins, land has quadrupled in value, and water is both valuable and difficult to obtain. Of former landmarks the old ditch has changed the least. Few improvements have been made, the water still ripples over the cobbles in the bed, the headgates are taxed to resist spring floods, the farmers' headgates are crumbling to pieces, and the distributing ditch is cutting each season a deeper gully in the cultivated field. But, worst of all, nothing has been done during all these years to lessen the waste of water by percolation. For every five cubic feet of water taken out of the creek, one is wasted before this volume has flowed four miles.

Some canals show even larger losses. The measurements made show losses of over 30 per cent in a single mile, while the average loss for all canal measurements reported is 18.22 per cent. While it is impossible to prevent all these losses, great improvements can be made at small expense.

As the demand for water increases these conditions will tend to be corrected, but the practice of the courts of decreeing rights to enough water

to supply land after a large part of it has been lost in transit will not tend to correct this evil. If a man is granted sufficient water for his land under economical use, and this quantity is measured to him at the head of his ditch, he will make every effort to stop losses which leave him without water enough for his land. This has been done in Nebraska. The law fixes the limit at 1 cubic foot of water per second for 70 acres, and the State Supreme Court has held that the measurement must be made at the head of the ditch. The state certainly has a right to insist in this way upon an economical use of its resources.

CARELESS IRRIGATION.

Where irrigated farms are large and skilled labor difficult to secure, the tendency is to crop a larger area than can be properly cared for. The average Montana farmer likes to have a large acreage in crops. His fields, as a rule, are well plowed and harrowed, but having performed what he considers these necessary preliminary operations and drilled in sufficient seed, he pays little attention to the condition of the surface for rapid and efficient irrigation. More care in this regard would pay well. If the surface is once carefully graded and the ditches located and built in such a manner as to meet the local requirements, a forage crop like alfalfa, may be grown for ten successive years with little additional outlay. The same is practically true of a grain crop. Even with a hoed crop like potatoes or sugar beets, it is an easy task to reduce the surface to a uniorm grade before the next crop is seeded.

The surface of the average irrigated land can be put in reasonably good condition for irrigation for $5 per acre, but to be safe it is here assumed that the cost is $7.50. This principal at 12 per cent would yield a revenue of 90 cents a year, and represents the difference between a rough, uneven surface and a smooth, graded surface. In the case of alfalfa, which is cut three times, this annual interest would amount to 30 cents per acre for each crop. The labor of irrigating the properly prepared field is much less, there is a saving of water, the soil is not damaged, there is a considerable increase in the yield, and the quality of the crop is improved. Taking all this into consideration an expenditure of $7.50 per acre would return 60 instead of 12 per cent. While only one crop is harvested in a year, the advantages of a carefully graded field would need to be worth 90 cents per acre a year but there are few practical irrigators would not admit that the extra quality of the yield, apart from any other consideration, would more than compensate for this outlay.

The saving of water would also be of great advantage to the State, since it would make possible the irrigation of more land. As was suggested in the discussion of poorly constructed ditches, rights should be limited to enough water for the land irrigated under good practice. Then the loss from waste of any kind would fall on the one making the waste.

RIGHTS SHOULD BE DEFINED AND ESTABLISHED.

Of the 1,500,000 acres irrigated in Montana only a small percentage has a well defined and clearly established water right. In all probability the

adjudicated rights to the use of water do not cover more than one-tenth of the total irrigated area.

The records pertaining to the appropriation of water, as filed in the recorder's offices of the respective counties, possess little value, for the reason that the majority of claims filed do not represnt accurately the plans of the claimants and there is no means of ascertaining from the records themselves which plans have been perfected and which have been abandoned.

No definite or accurate information can be obtained from county or State records regarding the volumes which are either appropriated or unappropriated from any public stream within the boundaries of the State. Neither can any accurate informaton be obtained from the county or State records regarding the volumes carried by irrigating ditches or the extent of the land which each ditch waters.

Those who have maintained or who have been compelled to defend a suit in court until they secured a decree are seldom protected in their rights. Again, some decisions of the courts in water cases are entirely ignored by those who distribute and use the water to which the decrees refer, and there is no means of finding out from the records which decrees are to be observed and which may be disregarded. The small percentage of rights which have been determined have not proved satisfactory on account of the time required, the excessive cost to the litigants, and the spirit of controversy, if not of open hostility, which usually exists between opposing claimants, thus precluding the possibility of ascertaining the facts. Besides, many decisions are considered so faulty as to be entirely ignored by the owners of the rights affected.

With few rights determined, and with little provision for the equitable distribution of water according to priorities, it is not surprising that waste, illegal diversions, and unjust allotments should prevail. Unjust distribution of water and failure to obtain it at the right time greatly affect the annual yields. Again, there is the time and labor lost in striving to protect one's rights; one man irrigates while another patrols the ditch. This common property, so valuable to the farmer, is not controlled by either the State or the nation, and men quarrel over it well-nigh continuously throughout the season. The division of water is the chief topic discussed in farm homes from seed time to harvest, and communities seem willing to spend the greater part of their earnings in protracted litigation. If some of the disadvantages which the owners of irrigated farms have to contend with were removed it could not but result in great gain to the revenue of the State. Take, for example, the one item of increased yield resulting from equitable division and continuous use of water, and few would estimate the value of this increased yield at less than 25 cents an acre. This is seemingly a trivial sum, yet in the aggregate it would amount to $375,000 a year.

As has been stated, the waste of water, which is the greatest evil in Montana irrigation practice, will tend to correct itself as the demand for water increases, but the evils arising from undefined rights and the lack of public supervision of distribution will grow with the demand for water and

greatly limit future development. These are matters which can be corrected only by proper legislation.

In the opinion of the writer, some of the essential features of the irrigation legislation needed by the State of Montana are as follows:

(1.) To declare the principles herein named upon which the right to use water shall be based:

(a) That the waters of the State shall be subject to appropriation for beneficial use: Provided, That no water can be legally diverted which is not put to a beneficial use.

(b) That rights to water for irrigation shall be appurtenant to definite tracts of land, specified in the applications and permits on which the rights are based, except that rights can be transferred to other tracts, or used for other purposes, where such transfer or change in use does not injure holders of other rights or reduce the supply beyond the amount of water transferred or used for other purposes: And provided further, That no transfer or change of use shall be made until approved by the State engineer or the court, after a properly advertised hearing has been given to all interested parties.

(2.) To make adequate provision for an early and equitable adjudication of rights to water which have already accrued, thus providing a guide for the distribution of water and for determining the amount of the unappropriated waters.

(3.) To provide for the acquirements of rights in the future by application to the State Engineer, and the construction of works and use of water after the issuing of a permit by the engineer; the right to be confirmed by the State after satisfactory proof to the engineer that the conditions of the permit have been fulfilled and the water applied to beneficial use.

(4.) To keep a complete record in the office of the State Engineer of each perfected right to the use of water, of each application, and of each permit for a new diversion or use.

(5.) To divide the State, according to drainage basins, into divisions and districts for administrative purposes.

(6.) To provide an administrative system for the equitable distribution of water among those entitled to its use.

TRANSFERS OF WATER RIGHTS.

In recommending that rights to water for irrigation be made appurtenant to the land watered it is not intended to make this provision too rigid. When a tract becomes too moist to need water, or when it becomes unprofitable to apply water, it is to the interest of both the owner and the public that he be accorded the privilege of transferring the water right to a more productive tract of land. But in granting this privilege there are two classes of rights that should be guarded, viz, those of neighboring water users and those of the public.

In order that these interests may be protected, provision should be made for determining in advance of the transfer whether the rights of others or the public will be injured. The Montana law at present provides that transfers

may not be made when the rights of others are injured; but the usual practice is for the transfer to be made, after which anyone claiming to be injured may bring suit to have it stopped. This puts on the one who certainly derives no benefit, and who may be injured, the burden of preventing the transfer. In Idaho the party wishing to make the transfer must make application to the State Engineer, who holds a hearing after advertisement of the application and the time and place of hearing. This places the burden where it belongs—on the party who is to benefit by the transfer. Such a hearing will also enable the State Engineer to determine whether the transfer will be detrimental to the public interest.

ADJUDICATION OF EXISTING RIGHTS.

The rights to water which have been acquired should be defined and established. Without this any administrative system is useless, as those charged with distributing water will have nothing to go by, and the State Engineer will have no means of knowing whether or not there is surplus water, rights to which may be acquired by applicants. On very few streams have the rights been defined and under the present system, as a rule, rights will not be defined until there is a shortage, and if they should be, rights acquired after an adjudication has taken place will not be included, which will make necessary new adjudications from time to time. If all existing rights are defined and new ones are acquired only under the supervision of the State Engineer, this necessity for periodical adjudication will be done away with. For securing a complete list of existing rights the present law has two serious defects. Adjudications will take place only on the initiative of the holders of rights, and if they are indisposed to take the matter up, rights may remain undefined for years. This has been the experience in Idaho, where a law was passed which authorized the State authorities to begin such actions. The enforcement of this law was fought by the farmers who did not want to stand the expense of an adjudication, and the law was declared void by the state courts (Bear Lake Co. v. Budge, 75 Pac., 615). But some way of forcing adjudication is absolutely essential to any orderly public control. Wyoming, Nebraska, Utah, and Nevada have such systems. Those in Utah and Nevada have not been tested in the courts, but the Wyoming and Nebraska laws have been repeatedly upheld by their State courts. Under these laws, state officials make surveys and measurements of the ditches and irrigated lands, and take testimony as to dates of construction and other facts bearing on the dates of acquirement and volume of rights, and on the basis of the surveys and the testimony define the rights. Appeal from such decision to the courts is provided for, but is not generally taken. The second serious defect with the present Montana system is that no provision is made for surveys to secure the facts as to capacities of ditches and areas irrigated. Decisions as to rights which depend entirely on these facts, so far as their volume is concerned, are based entirely on interested testimony. Whether rights are defined by administration officials or by the courts this exact knowledge as to physical facts is essential to just con-

clusions. In Utah, Idaho, and Oregon rights are defined by the courts, but the law provides for surveys by the State Engineer as a part of every adjudication. In Wyoming, Nebraska, and Nevada rights are defined by administrative officers as the basis of such surveys.

This work involves the use of substantial headgates to control diversions and suitable measuring devices to determine the flow. These structures should be inserted by and at the expense of the respective owners under the supervision of the State Engineer. As these structures will cost a considerable sum the cost of making the hydrographic survey and the necessary maps and compilations should be paid by the State. The general benefit from this work is surely sufficient to justify the State in bearing this expense.

The system of State control of irrigation recommended is based upon the police power of the State. In several States the unappropriated waters are declared to be the property of the State as a basis for laws controlling the acquirement of rights and the distribution of water, but in Wyoming, the only State having a constitutional declaration that the water belongs to the State, the supreme court has held that "The public ownership * * * is rather that of sovereign than proprietor," thus basing the law of that State on its police power rather than on its proprietorship of the water (Wiley v. Decker, 73 Pac., 210). The Colorado constitution declares that the unappropriated waters of that State are the property of the public, and its court has repeatedly upheld its irrigaion laws as a proper exercise of its police power. The constitution of Montana declares that the beneficial use of water is a public use, and any further declaration on this subject is not deemed necessary.

The additional data required for proper adjudication of rights consist of reliable testimony pertaining to the dates of appropriation of existing rights and accurate information regarding the early use of water from each ditch and the subsequent enlargement, if any. The codes of western states differ as to the methods of procedure of obtaining these additional facts and of making the final determination of water rights. In Utah the district court appoints from one to three referees; in North Dakota the attorney general, aided by the district attorneys of the districts affected, bring suit, while in Wyoming the adjudications are made by a board of five State officers, the majority of whom are thoroughly familiar with the character of the stream under consideration, the nature of the diversions, the character of the land irrigated, and the kind of crops grown. The vital point involved is that the settlement of these questions shall be placed in the hands of men having an expert knowledge of canal management and the practical requirements of irrigated agriculture. A duty of such far-reaching importance should not be imposed on either the attorney general or the judges of district courts for the reason that they may be too much burdened with other duties to give the necessary time and thought to such water suits.

DUTY OF WATER.

In Montana at least one-fourth of the total available stream flow in summer is now diverted and applied to land. In defining the rights which have been acquired no fixed general duty can be legally established, since each water-right owner is entitled to the amount of water which he has been accustomed to apply in an economical way. The duty of water for such rights must therefore be based on beneficial use and may vary with the length of the irrigation season, the character of the soil, nature of the crops, etc.

In the case of rights to be acquired the State has a free hand, and it may place a maximum limit on the amount of water which may be diverted to irrigate a given area of land. In the opinion of the writer this maximum amount should not exceed 3 acre feet. Fifteen inches of natural rainfall and 36 inches of irrigation water, or 51 inches in all, should be ample for any crop.

In all rights that are hereafter to be acquired the maximum time of use as well as the maximum quantity should be specified. This time limit for summer irrigation might be fixed at five consecutive months. A provision of this kind is necessary in order to utilize to the fullest extent the available water supply. Water is now used in Beaverhead and other counties for winter irrigation. As the area devoted to dry farming is increased the use of water during the early spring and fall months, and even in winter, is destined, it is believed, to increase in a more rapid ratio. It would seem to be well, therefore, to clearly define all kinds of rights to the use of water. One man desires water only during the crop-growing season, which is assumed to be five months; another desires water for winter irrigation, which may be assumed to be for a definite period also; while a third desires to divert a part of the flood flow to fill his storage reservoirs. Now, it would seem to be the duty of the State to permit all of these appropriations and others that may arise, but to so define both the time and amount that conflicts may be avoided.

ACQUIREMENTS OF RIGHTS.

The adjudication of all existing rights will fall far short of its greatest value if it is not accompanied by a provision that in the future rights can be acquired only under such supervision as will insure a public record of their dates and volumes, in order that there may be at all times a complete record of rights. The systems adopted for this in Wyoming, Nebraska, Idaho, Utah, and Nevada are in general the same, and may be considered the best. The person wishing to acquire a water right is required to apply to the State Engineer, stating in prescribed form how much water he wants and from what source, the location of his irrigation works, and the lands to be irrigated. If this application is in proper form, and there is unappropriated water in the source of supply, a permit is issued fixing the conditions under which the work must be done and the time when it must be completed. On or before the expiration of this time proof of completion must be submitted, and a certificate is then issued stating what rights have been acquired. Such a system is not intended as a limitation on the acquirement of rights, but rather as a means of encouraging construction by relieving the builders of works of

uncertainty as to the water supply and of the necessity of fighting for their rights in the courts.

ADMINISTRATIVE SYSTEM.

The need of competent state officers to divide the flow of canals and streams in a just manner among the water users has been keenly felt in Montana for more than a decade. In 1889 the State Legislature, in order to relieve the situation to some extent, enacted the following:

Sec. 1. Whenever the water rights pertaining to any stream or water syetem within the State of Montana have been determined by a decree of a competent court it shall be the duty of the district judge of the district within which such water rights are situated, upon the application of the owners of at least 25 per cent of the water rights affected by such decree, to appoint a commissioner, who shall have the authority to measure and distribute to the parties interested under such decree the water to which they are entitled according to their priority, as established by such decree; and for that purpose such commissioner shall have authority to enter upon any ditch, canal, aqueduct, or other source of conveying the waters affected by such decree, and to visit, inspect, and adjust all headgates or other means of distributing such waters, and shall have the same power as a sheriff or constable to arrest any and all persons interfering with the distribution made by him and to take such persons before the judge of the district court for trial for contempt of the decree of said court.

Sec. 2. The parties using the water shall be liable for the payment of the fees and compensation of such commissioner, and the judge of the district court is authorized and directed to fix the compensation of such commissioner, and to apportion the amount of such compensation proportionately among the water users named in said decree, and which said order shall have the force and effect of a judgment and may be enforced by an execution.

Sec. 3. If said commissioner shall fail to perform the duties imposed upon him by order of court he shall be deemed guilty of contempt of the order of said court.

This law has been a benefit to a small number of irrigators. Those whose rights had been established by a decree of the court took advantage of the means provided, petitioned the court to appoint a water commissioner, and had their water supply properly apportioned. As a rule, the commissioners were young men who were completing a course in engineering at the agricultural college of Montana, and being familiar with modern methods of measuring water, as well as honest and capable, their work was satisfactory. The sphere of action of the law is extremely limited because few rights have been established.

The act was amended by the last legislature, granting permission to commissioners to maintain ditches at the expense of the owners, provided that the majority of the water users desire it. Provision is also made for a hearing before the judge of any district court when a water user is dissatisfied with the distribution of water as made by the water commissioners. The water commissioner is likewise required to submit a full report to the judge at the close of the former's term of service, showing in detail the total amount of water as distributed to each water user during the season and the total cost for repairs and maintenance, whereupon the judge fixes the sum which each

shall pay in proportion to the amount of water which each has received. Any person who is dissatisfied with the report of the water commissioner may have a hearing before the judge.

The amended law requires the water user to provide a suitable headgate and a measuring device, and persons failing to supply these structures receive no water.

With general provision for the adjudication of all existing rights and the orderly acquirements of rights in the future, it would seem best to supersede the present commissioners appointed by the courts by those appointed by the Governor under some system that will insure the appointment of men familiar with irrigation practice.

In providing for distributing water each drainage basin should be regarded as a unit. The wisdom of this course is plainly seen in the behavior of the Bitter Root River. On August 12, 1903, the flow at Grantsville was 327 cubic feet per second, and leaving out of consideration the inflow from tributaries, the gain due to seepage in a distance of 48 miles was 1,111 cubic feet per second. It would, therefore, be unnecessary to shut water out of late canals at the upper end to supply older ones below, since they would be supplied by seepage. A long stream would not be within the jurisdiction of a single court, and some official with a wider jurisdiction than a court commissioner should have charge of the distribution of water from such a stream. In Colorado, Wyoming, Nebraska, Utah, Idaho, and Nevada this has been provided for by the appointment of water commissioners by the governor, upon recommendation of the county commissioners in some states and of the division engineer or superintendent in other states. In each of these states the plan is to divide the State into divisions on drainage lines in such a way that no stream will be in more than one division, and divide these into districts of any convenient size, trying to arrange them so that they will be as nearly independent as possible. For each district there is a commissioner who has direct charge of the distribution of water within his district, and for each division there is a superintendent who has general supervision of the work of the commissioners and decides all questions between district where a stream and its tributaries extend into more than one district.

IRRIGATION BY PUMPING.

For many years experiments have been made with various devices for pumping water for irrigating purposes, but no notable success has been achieved until quite recently, and it would appear from investigations made by the Bureau that the apparent failures in many undertakings of this character have been due to the lack of a thorough knowledge of conditions to be dealt with in each individual case and particularly the most appropriate machinery to be employed, rather than to any inherent wrong or inapplicability of this system of supplying water in itself. There are now in the neighborhood of 125 pumping irrigation plants in operation in the State, the larger portion of which have been installed during the past five years. To most men a pump is a pump, and the old plunger style being the best known to laymen, a good

many of the first installations were of this pattern, and these played their part in discrediting the system, for, where such pumps were installed in waters that carried silt and microscopic particles of quartz, the plunger was soon cut out and there was interminable trouble. Then came the centrifugal pump, and, while there have been failures with these also, they were due in practically every instance to lack of care in setting or operating. Properly installed, and run at their most advantageous capacity, they proved successful and were adopted by the grateful farmers because in their economical way they either made a harvest possible or doubled those he had been accustomed to.

For five years Mr. T. E. Lowery, of Great Falls, as a mechanical engineer, while acting as a salesman for an eastern machinery company, made an expert study of water and soil conditions in Montana, having more than a hundred analyses of water and almost as many more of soil made, the latter for use in the building of dams for storage reservoirs and valuable for the reason, as was finally demonstrated, that many dams were washed away because of the weakness and inadaptability of the soil used in their construction.

Failing to interest his employers in his efforts in this direction, Mr. Lowery in 1905 incorporated the Lowery Engineering Company of Great Falls, and is now erecting successful pumping plants, while still continuing his investigations and analyses.

The practicability of irrigation by the use of power pumping plants it is believed has been thoroughly demonstrated, and a number of individual cases are mentioned for the benefit of others.

Any of the gentlemen named may be communicated with if further information is desired. Mr. Thomas E. Bowman, of Culbertson, Valley County, has an 8-inch centrifugal pump with a 12 horsepower gasoline engine on his farm on the Big Muddy, about 30 miles from Culbertson, which irrigates 200 acres.

Mr. Kenneth McIvor, a dairyman, irrigates 200 acres of alfalfa six miles north of Great Falls from the Sun River with a 10-inch centrifugal pump and a 32 horsepower gasoline engine. This plant was installed in 1900, and now the land yields about five tons of alfalfa per acre from three and sometimes four cuttings, according to the season, and it is estimated that with the average price of gasoline at 25 cents the pumping plant has paid for itself each year.

Messrs. Lohr Bros., near Glasgow, in 1902 installed a 12 inch centrifugal pump with a 15-inch discharge, driven by a 50 horsepower automatic center crank steam engine, the steam generated in a 60 horsepower boiler with coal that costs $5 a ton laid down. The capacity of the plant is 5,000 gallons per minute, and cost $3,000. The water is lifted 27 feet from the Milk River, one of the silt rivers where the plunger pumps had failed, at a cost of 65 cents an acre for each irrigation. Seven hundred acres, 400 of which are in hay and the balance in wheat and oats, are covered.

Mr. James A. Johnson, of Shelby, in Teton County, has a 6-inch pump, operated by an 8 horsepower gasoline engine which he bought in 1905 which

irrigates 80 acres of alfalfa at a cost of 50 cents an acre for each irrigation. The plant has a capacity of 1,200 gallons per minute and the water is lifted from 9 to 12 feet, depending upon the height of the water.

In 1900 Mr. Wm. Witt of Fort Benton, bought a 6-inch centrifugal pump, operated by a 16 horsepower gasoline engine, to work against a 22-foot water lift which cost $1,300. It is claimed that the average cost per acre per season regardless of the number of irrigations made, has been about $1.30 for each of the seven years in use.

It is claimed that gasoline power at present prices for gasoline is the most economical fuel for a plant requiring 20 horsepower or less and a 30-foot water lift or less. It is also claimed that after the average soil is thoroughly soaked by irrigations in successive years that it requires less water, and in some cases as much as one third less.

HELENA HIGH SCHOOL.

AGRICULTURE.

No extensive knowledge or painstaking investigation of the general trend of present development is necessary to warrant the prediction that Montana is destined in the near future to take high place among the really great agricultural states in the Union. Abundant facts to substantiate this conclusion will be found on the pages devoted to a description of the several counties, that manner of presentation having been chosen with deliberate forethought to avoid, so far as possible, a monotony of detail.

The record is commended to those who desire information concerning agricultural possibilities in the State.

The latest report of the General Land Office shows that 18,521,719 acres of the total area of Montana have been appropriated for agricultural or other purposes. Of this amount not to exceed 3,000,000 acres is yielding crops or cultivated in any degree, and this is about equally divided between non-irrigated and irrigated land. Of 10,986,010 acres of public lands disposed of in twenty-one years, 6,611,083 acres was patented railroad land, sold to settlers and stockmen.

In 1906 the State Board of Equalization assessed 14,443,005 acres of land at $38,476,127, an average of about $2.65 an acre. This average is materially lowered by the prevailing custom of making an exceedingly small assessment against railroad land and the great excess of grazing over hay and grain land. The figures show an increase in assessed acreage of 3,900,469 acres, and twenty-five cents an acre in valuation since 1902. Some of the first-class grain land is assessed at more than $40 an acre for an entire county, but the average for the State will not exceed $15 for this class of land. Railroad lands range from about $3.25 an acre down, and unfenced grazing land is assessed at about 75 cents. The cultivated area of Montana will yield this year approximately $30,000,000 in strictly agricultural products, not including livestock, wool, poultry, eggs and butter. This amount is destined to be vastly increased within a few years, not only through an increased acreage, but by reason of changes in methods and crops, chief among the latter being the new industry of growing sugar beets, from which large returns are apparently assured.

For the year 1905 the acreage of spring wheat in Montana is given at 119,469 acres, with a production of 2,843,362 bushels, an average of 23.8 bushels an acre, as against an average for the United States of 14.7 bushels. No reliable figures are available of the production of winter wheat, but as the acreage devoted to this variety is fully equal to that sown to spring wheat, it is estimated that the production is at least as great as that given above.

This would make a total wheat yield for the State of 5,686,724 bushels, which is probably not far from correct. The average value a bushel is given at 71 cents or a total value for the crop of $4,037,574. Arizona, Utah, and Nevada are the only States whose average yield of wheat exceeds that of Montana. There were 178,911 acres of oats which yielded a total of 7,389,024 bushels, an average of 41.3 bushels, with an average for the United States of 34 bushels. The value of this crop was $3,177,280, or 43 cents a bushel. Barley averaged 33 bushels an acre on 15,227 acres, a total of 502,491 bushels, with a farm value of $281,395.

By far the greater part of rye sown was cut for hay, but 1,871 acres was threshed which yielded 37,420 bushels, or 20 bushels an acre, with a total farm value of $24,323, or 65 cents a bushel. Thirteen thousand, six hundred and eighty-eight acres were devoted to potatoes, with a yield of 1,642,560 bushels, an average of 120 bushels an acre. The farm value was $969,110, or 59 cents a bushel.

Hay to the value of $4,471,405 was cut from 362,939 acres, the average per acre being 1.60 tons, with an average farm value of $7.70 a ton.

It may interest the reader to know how these figures are obtained by the Department of Agriculture.

The Bureau of Statistics, acting as a disinterested agency, issues each month detailed reports relating to agricultural conditions in the United States, the data upon which these statements are based being obtained through a special field service, a corps of State statistical agents, and through a very large body of voluntary correspondents composed of county correspondents, township correspondents, and individual farmers.

A special field service is composed of ten traveling agents, each assigned to report for a given group of states and who are especially qualified by statistical training and practical knowledge of the crops. They systematically travel over the districts assigned them, carefully note the development of each crop, and keep in touch with best informed opinion; and they render written and telegraphic reports monthly or as required.

The state statistical agents are paid agents in 43 of the states. Each of these reports for his state and maintains a corps of correspondents independent of those reporting direct to the Department at Washington. These aids report each month directly to the state agent on schedules furnished them. Their reports are then tabulated and "weighed" for the use of the state agent. Weighting consists in giving to each partial report only that arithmetical weight which the acreage in the area covered by the partial report demands and assembling the whole into one statement. From these summarized statements and in the light of his own knowledge of conditions, the state agent formulates his report to the Department.

There are in the United States approximately 2,700 counties of agricultural importance, and in each of these the Department has a county correspondent who maintains an organization of several assistants. They are selected with special reference to their qualifications and, with the county as the geographical unit, make reports each month directly to Washington.

In townships and voting precincts where farming operations are extensively carried on the Department also has correspondents who make direct monthly reports, and finally, at the end of the growing season, a large number of farmers report on the results of their own operations during the year.

For the purpose of checking up the results of the several sources of information and reducing the possibility of error to a minimum the final results are made up by a crop-reporting board composed of the chief statistician as chairman, and four individual members, selected from statisticians and officials in the bureaus and members of the special field service called to Washington on report days for that purpose.

After the assembling of the board all reports by states from the several distinct corps of correspdonents are brought together in convenient form in parallel columns on final tabulation slips, and the board is thus provided with separate estimates covering the same territory and the same crops, each from correspondents thoroughly familiar with the territory for which they report. There are also the reports made weekly on each crop by the Weather Bureau. With all these data before them each individual member of the board computes separately his own estimate of each crop by states. These reports are then compared and discussed by the board, and the final figures are decided upon. It is interesting to remark how often the reports from the different corps of correspondents are very nearly identical, and how often the final figures arrived at by the individual members of the board agree with each other. The state estimates, which are in percentages, are then multiplied into the acreages for their respective states, and the sum of these products is divided by the sum of the acreages, giving the percentage of the entire crop. Of the production and value of the various crops in 1905 the Year Book of the Department of Agriculture says:

Corn has reached its highest production with 2,708,000,000 bushels, a gain of 42,000,000 over the next lower year, 1899. In value, also, the corn crop of this year is higher than that of the next lower year, 1904, by $128,000,000, and the total value may be $1,216,000,000. No other crop is worth half as much. Second in order of value among all kinds of crops is the hay crop, which takes second place back from the cotton crop, which held it for the two preceding years. Many hay crops have exceeded in tons the product of this year, but because of high prices the crop reaches a value of $605,000,000, which is higher by $34,000,000 than the value of the crop of 1893.

Fears that last year the United States had fallen to the level of its consumption in the production of wheat were ill-founded. The short crop of that year is followed this year by the second wheat crop in size that this country has ever produced, 684,000,000 bushels, and the value of this crop, $525,000,000, overtops the highest value before reached, in 1891, by $11,000,000.

Fifth in the order of value among crops of the year is the oat crop, with 939,000,000 bushels, or 50,000,000 bushels under the highest production in 1902. In value as well as yield the oat crop of this year has been exceeded in only two previous years, amounting to $282,000,000, only $22,000,000 under that of 1902.

Next after oats comes the potato crop, which was a partial failure and falls below the highest production of previous years, that of 1904, by 72,000,000 bushels; but in value the crop has done better, since it occupies the fourth place from the highest and is valued at $138,000,000, or only $13,000,000 below the highest preceding value, that for 1903.

The high price for barley during the last three years has much increased the size and value of this crop so that it now occupies seventh place among the leading agricultural crops. In quantity the crop this year, 133,000,000 bushels, is third among annual barley crops, though only 7,000,000 bushels under the highest crop, that of 1904, and has a value of $58,000,000, or only $4,000,000 under the most valuable crop of this cereal, that of 1902. The aggregate production of all cereals, including rice, reached the enormous total of 4,521,000,000 bushels, with a farm value of $2,123,000,000, or more than $145,000,000 over last year. All values adopted for the various products, including those for Montana, are farm values, and are in no wise to be mistaken for exchange, middleman's or consumer's values.

The work of the Department in Montana consists of experiments for removing alkali from the soil, the establishment of a station to demonstrate the utility of windmills in pumping water for irrigating purposes, and in conducting dry farming experiments upon selected areas varying in size and located in different parts of the State.

In the first named investigations the tract selected was twenty acres belonging to Mr. Ed. O'Donnell, situated about one mile west of Billings. Preliminary arrangements were made during the latter part of the preceding fiscal year, but the actual installation was not completed until November, 1904.

The soil of the tract was what is locally known as gumbo, and is characteristic of large areas in various parts of the State. It is strongly impregnated with sodium sulphate, a form of alkali not especially injurious unless contained in the soil in excessive quantity. The soils of the Yellowstone Valley are largely derived from the breaking down of the Fort Benton shales, and it is from these shales that the accumulated alkali is derived. The rise of the alkali is comparatively recent in the valley, as it is only during the last ten or twelve years that lands have become damaged. At present, however, the damage from alkali and seepage water is very serious and rapidly increasing. This has been shown by the Bureau's studies made first in 1897 and 1898, and later by a soil survey made in 1902, showing the exact amount of land injured by these causes. Seepage from the canals on the higher bench land has caused large areas to become waterlogged, while the area of alkali land increases from year to year. Owing to the completion of a large high-line canal during the last year, the damage from these causes will undoubtedly increase rather more than before unless extreme measures are at once undertaken by the parties most interested.

As the Reclamation Service will in the near future open to settlement nearly 200,000 acres of land near Billings, it is evident that the installation of a demonstration tract in this locality was especially fortunate, since some

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of the lands soon to be irrigated will probably suffer from alkali and seepage after irrigation is practiced for a few years.

As Billings is situated a long distance from the nearest tile factory, and freight rates are high, it was considered advisable to award the contract for tile to the local brickmakers, who promised to deliver by August 1, 1904. They procured a small tile machine and commenced making tile of a fair quality. After making a few hundred feet the machine was broken beyond repair and the company decided not, for the present, to procure other machinery. As the ditches were by that time partly excavated it was necessary to purchase tile elsewhere. Accordingly, arrangements were made to buy them from a Kansas City firm, as the lowest bidder.

This greatly delayed installation of the drainage system, so that it was not until November, 1904, that the tiles were in place and the levees thrown up. By that time no water could be had for flooding, and no further work could be done. During the spring of 1905, the rainfall was far in excess of any known records in the valley, and this materially aided in the reclamation of the soil. The rains were so frequent and heavy that the soil did not dry sufficiently to allow the complete leveling of the surface preparatory to flooding. But with the copious rainfall the land has been improved, for the drainage system has worked perfectly; and during the month of June the tiles have discharged large quantities of strongly impregnated alkali water. It is believed that, with the excellent drainage system, continuous flooding for one year will accomplish much toward the reclamation of the tract. The soil is perhaps the heaviest in texture of any of the tracts of land selected by the Bureau, and just how soon the alkali can be leached from it can only be determined by actual experiment.

The land selected for the pumping station is in the vicinity of Great Falls, and operations are to be commenced early in 1907. In this connection the problems are many and often vexatious, including among others the selection of a type of windmill whose machinery will not easily wear out, nor the mill itself blow to pieces, and the construction of earthern reservoirs which will hold the necessary surplus of water.

Experience in stations already established have shown that there is no windmill now on the market which meets the requirements of the work. Some of them have literally been blown away by the high winds so prevalent in the West, and the cog wheels in others have been worn smooth by one season's work. Another serious objection is found in the fact that in most types, at least eight miles an hour is the lowest wind at which the mills will begin to work, and that when it reaches eighteen or twenty miles an hour, the stroke of the pump is so short and rapid that there is no execution. To remedy these defects a device has been patented which not only allows the mill to start pumping when the wind is blowing three miles an hour, but, with its increasing velocity, automatically lengthens the stroke of the pump, thus continuing operations effectively in almost any wind.

SETTLEMENT.

Certain sections of the State are experiencing remarkable activity in attracting settlers, and extending the cultivated area both with and without the use of an artificial water supply. In the northern part, all the territory adjacent to the Great Northern railroad is being rapidly taken up, and it is very noticeable that most of the new-comers are satisfied with a reasonable amount of land, devoting their attention more particularly to grain and other farm produce, rather than to stock-raising as has formerly been the custom. This is especially true of the country tributary to Culbertson, which has undoubtedly witnessed as great an increase in population in two years last past, as any farming community in the State. Part of this increase has been due to colonizing, but by far the greater portion is the result of individual home seeking, aided, of course, by legitimate efforts of railroad immigration agents. There is probably more unsurveyed government land in Valley County that is arable than in any other county in the State, and as the government surveys are now being rapidly extended in this district opportunities for settlers will continue good for some time to come. The whole Yellowstone Valley, from the Dakota line to Big Timber, has also been the scene of wonderful activity and progress, stimulated by the Government irrigation projects, and the fecundity of the soil. There is little doubt that in ten years this valley and the territory along the line of the Great Northern railroad, including the Milk River Valley, will contain the greater part of the population of Montana. Both are wonderful regions of natural resources, now undergoing a great transformation which must be seen to be appreciated.

Then there is the central part of the State from Billings north and west to Great Falls. This vast territory, devoted principally to stock-raising by reason of a lack of transportation facilities, is now being enlivened by railroad construction, that is certain to bring into existence many new towns and prosperous farming communities. Here again are vast areas of Government land, affording splendid opportunities for the homeseeker, while the mountains of this section of the State are so rich in minerals that they now yield, even with their nominal development, a large part of the total gold production of Montana.

It must not be supposed that particular mention of these three districts means that progress and development are confined to them alone, for such is not the case. They are selected solely for the reason that they represent in a high degree the general prosperity and upbuilding of Montana, through which certain portions of the State are being brought up to the plane of localities hitherto more favored. Places that have been looked upon as undesirable are becoming better and more favorably known, and others are coming into full fruition through the beneficence of Government aid to irrigation. The whole State shares in the uplift due to bountiful crops, fair prices for wool and livestock, expenditures for canals and railroads, and the wonderful products of the mines and forests.

ADULTERATED SEEDS.

It is greatly to be regretted that the State has made no provision for the examiation of seeds, with heavy penalties for adulteration. That this practice is very commonly indulged in is well known to every farmer in the State, but there is no redress. Few can afford the time to test the quality of the stock of seeds offered for sale whether purchased at home or abroad, and when the crop is sown and fails to germinate it is too late. It is much to the credit of the State that little complaint is heard of the purity of home-grown seeds. But local dealers are imposed upon by unscrupulous outside growers, and the farmer has to take the consequences. This is particularly true of alfalfa seed. It is difficult to purchase this seed in bulk that will show over sixty per cent germination, and some of it not over half. At the price of $14 to $15 per cwt., this is just plain robbery, and some measures to protect the farmer and the honest seed grower alike, should be devised and enacted into law.

So great has been the adulteration of seeds that Congress directed the Secretary of Agriculture to make tests for the purpose of ascertaining the names of persons guilty and publishing the same. In the investigations, 352 samples of seed of alfalfa were obtained in the open market and examined. Of these, 160, or nearly one-half of the samples were found to contain seed of the destructive parasite plant dodder, 9 samples were found to be adulterated with seed of yellow trefoil, and 9 samples adulterated with bur clover.

Yellow trefoil is not used to any extent as a forage plant in the United States, but the seed is imported from Europe at about 5 cents a pound, and used as an adulterant of red clover and alfalfa seed. Although bur clover is cultivated in the gulf states, the seed found mixed with that of alfalfa is not the commercial bur clover seed of this country, but a by-product secured in cleaning South American wool, and is imported from Germany in low grade alfalfa seed.

In accordance with the Act of Congress above referred to, publication was made of the names and addresses of the seedsmen who offered for sale the lots found to be adulterated, together with the percentage of adulteration in each lot as follows:

The W. E. Barrett Company, Providence, 7.78 per cent; Caughey & Carran, Detroit, 8.79 per cent; S. W. Fowler & Company, Toledo, 7.65 per cent; Wm. S. Gilbreath Seed Company, Indianapolis, 44.17 per cent; Martin Kunkel & Sons, Davenport, 39.86 per cent; Providence Seed Company, Providence, 9.72 per cent; Ross Bros. Company, Worcester, Mass., 53.28 per cent; L. Teweles & Company, Milwaukee, 20.28 per cent.

The Department at Washington will examine and report promptly upon the presence of adulterants or dodder in any samples submitted to them, but this is of doubtful advantage or service to the Montana farmer. Provision should be made in the pure food law for inspection of seeds, with the necessary appropriation and executive authority to make the law operative.

This matter might well be taken up by one of the various farmers organizations, and presented to the legislature in an effective manner.

ELEVATOR STORAGE CAPACITY.

The elevator capacity of the State is being largely increased from year to year, having now reached a total of nearly 3,000,000 bushels. The Yellowstone Valley mills have a chain of elevators, with the principal one at Billings holding 150,000 bushels. The building is of steel, and modern in every respect. Other elevators of this company are located at Fromberg and Bridger of 30,000 bushels capacity each.

The Bozeman Elevator Company has a new new fireproof elevator, capacity 78,000 bushels, which is a notable addition to the industries of that city.

The little town of Moore, in Fergus County also has a new 30,000-bushel elevator, to accommodate the products of the bench lands of that vicinity. At Plains and Chouteau the new flour mills have elevators in connection.

Grain production throughout the State is increasing and in 1905 was for the first time included in the figures compiled by the United States Department of Agriculture in the Crop Bulletin. These figures, however, are so incomplete that they are misleading and are, therefore, not published in this report. An estimate of the 1906 yield in Gallatin Valley of all kinds of grain, shows 3,500,000 bushels. In 1905 the production was 3,150,000 bushels, consisting of 1,250,000 bushels of wheat, 1,500,000 bushels of oats, and 400,000 bushels of barley.

Gallatin county mills ground 150,000 barrels of flour in 1905, practically all from wheat grown in that section.

Other grain counties are keeping up their splendid reputations as producers, the crop of 1906 surpassing all others both in quantity and quality. At the present writing, however, threshing has not progressed sufficiently to enable the publication of figures. Much of the grain is still in the stack, and the work of threshing will be prolonged until late in the winter.

It is estimated that Madison County will produce at least 200,000 bushels of wheat and oats.

The Birchdale Stock Farm in Beaverhead County broke all previous records. From 1,300 acres, 101,347 bushels of oats were raised weighing 42 pounds to the bushel.

In addition to the grain crop nearly 4,000 tons of hay were produced, mostly alfalfa. The total income from the farm, including receipts from the sale of livestock, was $112,000, while operating expenses were estimated to be $52,000 or a net income of $60,000.

When one considers that only a few years ago the land of this ranch consisting of 5,700 acres of patented land, and 11,000 acres of school lands leased from the State, was a waste of sage brush and cactus, which no one but the present owner deemed fit for any use, it is plain to be seen that perseverence, industry and irrigation combined, have worked wonders. In the vicinity of Conrad, Teton County, nearly 5,000 acres of land were cropped in 1906, being in the main supplied with water from the new canal of the Conrad Company.

What is known as the Bradford irrigation project will bring a vast tract under cultivation in this County in the near future. Farmers here are turning their attention more to the production of grain now that water is assured, as offering a greater profit than hay, which has heretofore been the principal crop.

In Cascade County the millers are making great efforts to increase the acreage of winter wheat grown without water as they claim a better quality and, therefore, a higher priced flour can be made from this variety. The Government's Sun River irrigation project now in process of construction will bring thousands of acres of land tributary to Great Falls under cultivation and assist materially in the future development of this region. In Missoula and Ravalli Counties there are private reclamation works under way which will add many acres to the productive areas of Western Montana, the land being devoted to grain and fruit.

DRY FARMING.

Considering the fact that three-fourths of all the wheat produced in Montana is grown without irrigation; that not to exceed 6,000,000 of the 30,000,000 acres of arable land in the State will ever be susceptibble of irrigation under any circumstances; that by far the larger portion of land recently brought under cultivation has been hitherto unproductive bench lands whose grain crops have matured without a drop of artificial water supply; and that thousands of bushels of wheat and oats and other farm products are shipped into Montana every year, there is little cause for wonder that the subject of dry farming is one of absorbing interest to farmers and business men alike.

The system has strong supporters, and just as strenuous opponents. Two gentlemen of long experience present their sides of the question in their respective publications. The Rocky Mountain Husbandman says:

"If the wheat industry of any section of Montana depends upon dry land farming, it is leaning upon a 'broken reed,' and has but a limited future. And if this newspaper thought for one moment that the farming interests of the northern half of this State depended upon the development of dry land farming, we would change our location before the sun goes down. We know all we care to learn and have had all the experience we want, in this kind of agriculture. It is not a poor man's pursuit, and it is the poor men of the country that are tilling the earth."

The Virginia City Madisonian says: "Less than ten years ago a colony of farmers settled in Summit Valley in this county (Madison) and began raising winter wheat without irrigation. They were successful and raised large crops. Then they began the real work of home-building, setting out fruit trees, which grew and thrived, and now large quantities of golden and rosy cheeked apples are raised each year in that locality. These experiments are spreading over all sections of Montana. Over in Fergus County thousands of bushels of wheat were raised this year without any irrigation. A person needs to ride over some of these bench lands to get an idea of the future possibilities of Montana as a grain producing state. The introduction of desert plants, the acclimation of grain to desert land conditions, and the adaptability of large areas to growing macaroni wheat are factors in the

solution of the arid land problem. If we have as much to learn as we have learned, it is reasonable to predict that within the present generation all of the bench lands of Montana will be brought under cultivation."

These views represent the extremes of the situation. Both are right, but there is yet a middle ground. Let what each says apply to localities and they are both right. Neither statement can be substantiated for the entire State together. Flathead county is one of the best agricultural districts in the State and men have grown rich off of dry land farms there, but there is a greater precipitation on the west side of the Rockies than on the east, and with all this in view it remains to be said that the last three dry seasons in that county has stimulated the irrigation idea and surveys have recently been made with a view to watering all that valley north of the lake.

Some of the bench lands of Cascade County have been farmed with extraordinary profit for more than fifteen years and this county is one of the typically arid on the east side of the range. But there are other portions of this county that no one has yet had the temerity to settle upon, and it is extremely doubtful if a productive farm could be conducted there.

Most of the dry land farming in the Gallatin Valley is the wheat that is sown on the mountain sides where there is always a greater precipitation than in the valley and the snow and rain is present at a seasonable time for the growing of this grain. Such farms, however, are practically limited to wheat growing.

In the Lower Yellowstone Valley there were some excellent crops raised this year because there was more rain than usual. In three years more, nevertheless, the Government will have covered this same land with water and its productivity will be almost if not quite doubled.

Near the town of Moore in Fergus County, where there has been such a rush for dry land farms in the last two years, they grew about 18 bushels to the acre in 1906 on first class black loam land that will easily yield anywhere from 30 to 45 bushels per acre if water could be gotten on it. An average of between 35 to 40 bushels is not at all too much to expect from this land when irrigated.

Dry land farming is not an untried experiment, by any means. In the localities mentioned and others, as well, it has been proven an unqualified success. It has been successfully conducted in localities of Yellowstone, Teton, Missoula and Ravalli counties. Most of the land thus farmed is allowed to summer fallow and is then sown with winter wheat. No other grain does so well as wheat, though certain varieties of feed barley are grown, as is also rye hay. The latter, however, makes a rather poor feed for anything.

The average yield of wheat from all this land together could hardly be estimated to run higher than 20 bushels per acre, and while this looks small as compared with the yield from irrigated fields, it is by far greater than the average in older and more noted grain producing states.

Nearly all the high, rolling foothills along the east side of the Gallatin Valley, and extending many miles to the north along the Flathead Pass

country, is now one almost continuous wheat field producing reasonable crops of excellent wheat without any irrigation whatever.

The season of 1905 was one of the dryest and hottest experienced in this district for many years, yet the dry land wheat fields averaged about 20 bushels to the acre, which is considerably less than usual.

Another portion of Gallatin County that is coming into prominence as a dry land farming locality is Upper Camp Creek, directly west of Salesville. There the farmers have no facilities for irrigation whatever, water for domestic purposes being considered somewhat of a luxury in some sections. Yet there is a quite a colony of prosperous settlers there, and they raise spring wheat, oats, and vegetables, as well as winter wheat and rye, quite successfully and profitably.

The growing of grain on the dry bench lands along the Montana railroad in Fergus County is a revelation to the oldest inhabitant. This hitherto unproductive and practically worthless land has been rapidly settled upon until scarcely an acre remains unoccupied. Market conditions are not what they should be, and without doubt could be much improved by a progressive organization among the farmers of that section. Cascade and Teton Counties have vast areas under cultivation without water, but irrigation enterprises now in course of construction will soon change farming conditions materially. It has recently been stated in the public press over the signature of the General Land Agent of the Northern Pacific Railway that the reason for withdrawing all their Montana lands from sale some years ago was to allow time for a series of experiments in dry land farming, at the conclusion of which these lands would be placed upon the market, thus giving intending purchasers the benefit of the knowledge acquired. In connection with the Bozeman Experiment Station experiments have been conducted for two years by the railroad and will doubtless be continued for some time to come. Three farms were operated during 1905, at Helena, Miles City and Glendive, and the results were declared to be most satisfactory. From the Glendive farm the yield was 16 bushels of wheat an acre, with one-half bushel of seed used; 32 bushels of oats, with 40 pounds of seed; rye, 13 bushels, with 30 pounds of seed; spelz, 22 bushels, with 40 pounds of seed; potatoes, 132 bushels, with 750 pounds of seed; barley, 19 bushels, with 40 pounds of seed. There were about 20 acres in these crops, besides 8 acres of corn, and ten acres of winter wheat and rye. In no case was there a failure to get a net return from the experiments, the crops paying for everything, including labor at $5 a day for man and team and $2.50 a day for farm laborers. The profit ranged from $5 to $75 an acre. Marketable potatoes were separated from unmarketable ones and the former sold at a price that brought the total profit from one acre to $107.

In 1906 Prof. Atkinson, Agronomist at the Agricultural Experiment Station, writes that "Experiments were conducted in Dawson County, 25 miles north of Glendive; Rosebud, 6 miles out of Forsyth; Cascade County, 16 miles out of Great Falls in the direction of Belt: Chouteau County, 25 miles straight north of Harlem; Teton County, 6 miles southwest of Shelby. There

were forty acres in every farm and tests covered investigations to determine the relative crop values, rates of seeding, etc. Of course, this being the first year on most of the farms the growth conditions were far from being good. The sod was tough and it was difficult to get the soil into good mulch condition. The average yield on all the farms was: Spring wheat, 17.66 bushels per acre; oats, 29.75; barley, 26.52; spring rye, 17.24; flax, 11.49; fall rye, 23.50; potatoes, 89.67.

"In the test for different returns of seeding the largest returns in almost every case came from sowing a very small amount of seed, three pecks to the acre giving us the best returns. In all, after considering this year's work and what was done in 1905, we believe that much of the non-irrigated land in Montana can be cultivated with good profit."

Experiments in dry farming have naturally resulted in many attempts to discover crops best suited to this style of agriculture. Brome grass, spelz, flax, and others, besides wheat, oats and rye, have been tried with varying results. Remarkable advantage is claimed with apparent good reason for Russian barley. Generally speaking, no commercial barley is grown in the State without water, but Mr. J. C. Dawes, who has a dry ranch on the bench lands along Norwegian Creek, north of Norris, Madison County, has had wonderful success with this grain, and claims to have demonstrated that a new epoch has been opened for the Montana farmer. The experiments have been conducted for two seasons.

This barley, which is grown extensively on the Russian steppes, differs considerably from the native grain. The head resembles wheat and the kernel is very similar. Fifty to sixty bushels of well developed grain can be raised on one acre of dry bench land without the use of water, and as it matures in ninety days the hot, dry weather of the latter part of July and August can be avoided.

For the season of 1906 seeding was begun on April 15, and on July 15, following, the reapers were at work cutting the crop. A half bushel of seed is sufficient for a good crop, and the grain shows above ground in six to eight days after seeding.

While the Russian barley can be threshed out and used the same as the native grain, Mr. Dawes is enthusiastic over the great possibilities of feeding it in the straw to livestock in place of hay. He declares that one ton of the barley contains more nutriment than three tons of the best alfalfa. The straw is tender and sweet and cattle, sheep and even hogs eat it readily. The publicity given to the results of the Madison County experiments with this grain has led many farmers throughout the State to declare their intentions of seeding a considerable acreage next season and especial attention will be paid to the work of securing reliable data upon operations in this direction. If predictions made for this new cereal be verified it will mean an extension of winter feeding of cattle and sheep, and perhaps lead to a production of pork and pork products in some degree commensurate with the consumption of such food in the State.

SOIL INOCULATION.

The publication of the results obtained with pure cultures in inoculating leguminous plants has resulted in a very great demand being made upon the Department of Agriculture for inoculating material. The distribution made during 1904 was for the purpose of obtaining a large number of tests of the method under average farm conditions, and it was impossible to anticipate the demand which was made the following year. Distribution will be continued to such extent as the limited facilities of the Department will permit, and all statements that distributions have been discontinued are erroneous. Applicants should state what legume is to be sown, time of sowing, and quantity of seed to be treated.

The patent which the Department holds upon the method of growing and distributing nitrogen fixing bacteria was taken out in such a way that no one can maintain a monopoly of the manufacture of such cultures. It is held in the name of Dr. George T. Moore, who developed and perfected the method. Upon application the Department furnishes without discrimination all necessary information, and as far as possible foundation cultures, to the bacteriologsts representing experiment stations and commercial concerns which claim to be properly equipped, but it does not in any way guarantee their product.

The method of distributing practically pure cultures of nitrogen-fixing bacteria dried on cotton has not proven entirely satisfactory, and after thorough examination and tests, the Department has adopted the practice of sending out pure cultures in small tubes hermetically sealed.

The experiments carried on by the Department of Agriculture have demonstrated the fact that by the proper use of practically pure cultures the nodule-forming bacteria are actually carried into the soil. These bacteria are able to form root nodules and where other conditions are favorable the inoculation thus brought about makes possible the growth of a legume in soils where it had failed previously from lack of bacteria. The original cultures used, however, must be prepared with the utmost care, and with a view to preserving or increasing their natural power of nitrogen fixation.

Before experimenting with any bacterial preparations for legumes, the farmer should study thoroughly the soil conditions under which the use of cultures offers any possibility of gain. (a)

Briefly, these conditions may be summed up as follows:

WHEN INOCULATION IS NECESSARY.

Inoculation is necessary—

(1) On a soil low in organic matter that has not previously borne leguminous crops.

(2) If the legumes previously grown on the same land were devoid of nodules, or "nitrogen knots," showing the need for supplying the nodule-forming bacteria.

(3) When the legume to be sown belongs to a species not closely related to one previously grown on the same soil. For instance, soil in which red clover forms nodules will often fail to produce nodules on alfalfa when sown with alfalfa for the first time.

a Fully described in Farmers' Bulletin No. 214 of the Department of Agriculture, which will be sent without cost upon application to the Secretary of Agriculture.

WHEN INOCULATION MAY PROVE ADVANTAGEOUS.

Inoculation may prove advantageous—

(1) When the soil produces a sickly growth of legumes, even though their roots show some nodules.

If the cultures introduced are of the highest virility, their use will often result in a more vigorous growth.

(2) When a leguminous crop already sown has made a stand, but gives evidence of failing, due to the absence of root nodules.

The use of the culture liquid as a spray or by mixture with soil and top-dressing may save the stand if other conditions are favorable.

WHEN INOCULATION IS UNNECESSARY.

On the other hand, inoculation is unnecessary and offers little prospect of gain—

(1) Where the leguminous crops usually grown are producing up to the average and the roots show nodules in normal abundance.

Cultures of nitrogen-fixing bacteria are not to be regarded in the light of fertilizers, increasing yields under all average conditions. They do not contain the nitrogen itself, but the bacteria make it possible for the legumes to secure nitrogen from the air (through the formation of root nodules), and where the soil is already adequately supplied with these bacteria it will not usually pay to practice any form of artificial inoculation.

(2) When the soil is already rich in nitrogen.

It is neither necessary nor profitable to inoculate a soil rich in nitrogen when sowing legumes. Not only does the available nitrogen in the soil render the formation of nodules less necessary, but nitrogenous materials in the soil largely prevent the bacteria from forming nodules.

Any increased virility in nitrogen-fixing power possessed by any types of bacteria yet distributed may be rapidly lost in a soil containing an abundance of nitrogen, because the bacteria are rapidly multiplying in a medium in which there is no premium on vigor in securing atmospheric nitrogen.

WHEN FAILURE IS TO BE EXPECTED.

Inoculation will fail where other conditions (aside from the need of bacteria) are not taken into account, as the following:

(1) In soil that is acid and in need of lime.

Liming to correct acidity is as important for the proper activity of the bacteria as for the growth of the plants.

(2) In soil that responds in a marked way to fertilizers, such as potash, phosphoric acid, or lime.

The activity of the bacteria in securing nitrogen from the air and rendering it available to the legumes does not do away with the need for such fertilizing elements as potash and phosphorus.

(3) It must also be remembered that inoculation does not "act like magic;" it will not overcome results due to bad seed, improper preparation and cultivation of ground, and decidedly adverse conditions of weather or climate.

In the use of cultures, also, failure is almost certain where the directions are not carefully studied and intelligently followed.

(4) As the physics, the chemistry, and the biology of soils are studied in the laboratory and by means of actual field-plot trials to determine yield and quality of crops and the effect of one crop on the following crops, the very great complexity of soil and farm management becomes more manifest.

The value of pure-bred bacteria, whether associated with the crop or existing independently in the soil, as is true of fertilizers, can not be predicted with certainty on

any soil without trial. Success on similar near-by lands may be taken as good evidence. But, unlike fertilizers, bacteria should in time be so inexpensive that each farmer can afford to try them for each leguminous crop on each field or soil type on his farm. The methods of distributing in dried form and the easy methods of multiplying on the farm in sufficient quantities to inoculate fields will make it possible to have all fields inoculated at all times.

INCREASING CULTURES.

We are receiving numerous requests from persons who have secured commercial cultures, as well as those sent out from the Department of Agriculture, for information as to the methods employed in producing a large quantity of liquid culture from the dry culture secured as a starter; that is, how to make an "acre culture" do for 25 or 100 acres. Such methods will give good results only when special precautions are taken, and on this account have not been generally recommended. The contaminations, such as yeasts, molds, etc., which are bound to occur to a greater or less extent, are apt to take possession of the culture solution in which the bacteria are being multiplied, and unless great care is taken in thoroughly sterilizing all utensils employed the resulting culture will have no beneficial effect. The extra time required to secure sufficient growth of bacteria in 10 gallons of solution from a dry culture originally intended to produce a one-gallon liquid culture makes the risk from contamination much greater than where the dry culture is proportioned in size to the larger amount of solution. If a growth sufficient to cloud the solution takes place within two days, the chances of securing an efficient culture are much better than where a longer time is taken; so that the volume of solution prepared should never exceed the actual requirements of the occasion.

The following directions are based on making 10 gallons of liquid culture, sufficient to inoculate 20 bushels of seed. By a little computation the directions may be adapted to five gallons or to any intermediate quantities.

PREPARING AND USING THE CULTURE SOLUTION.

To prepare the culture solution, first select the tub, bucket, or other vessel in which you wish to grow the bacteria. Clean and scald it out thoroughly. For making the culture solution, rain water that has been thoroughly boiled and allowed to cool is best, though any good drinking water will answer. Add to 10 gallons of water 12 ounces of either brown or granulated (preferably granulated) sugar, 1½ ounces of potassium phosphate (monobasic), which can be obtained at any drug store, and one-sixteenth ounce (30 grains) of magnesium sulphate. Stir until dissolved, then carefully open the small package containing the bacteria-laden cotton and drop the cotton into the solution. Do not handle any more than is absolutely necessary. Cover the tub with a moist, clean cloth to protect from dust, mold-speres, etc. Keep in a warm place, but never let the temperature rise above blood heat. After twenty-four hours add 6 ounces of ammonium phosphate and allow the mixture to stand for another twenty-four hours. The liquid should now be cloudy and ready for use; if sufficient growth has not taken place to bring about this cloudiness, further time should be given, not to exceed a few days.

TO INOCULATE SEED.

Use enough culture liquid to moisten the seed thoroughly—about one-half of a gallon per bushel. This inoculating may be done either in a tub or trough, or by sprinkling the culture liquid on the seed on a clean floor and stirring and turning the heaps of seed with shovels until all are thoroughly moistened. After inoculation the seed should be spread out in a clean, shady place until sufficiently dry to handle. If planting is not to be done at once, the seed must be thoroughly dried to prevent molding. In dry weather about 25 bushels can be dried in half a day on 300 square feet of floor space. To do this there must be several open windows or doors to allow a free circulation of air, and the seed must be frequently stirred with a lawn rake.

The inoculated seed, if thoroughly dried, may usually be kept without deterioration for several months.

TO INOCULATE SOIL.

Take enough dry earth or sand so that the solution will merely moisten it. The soil should be preferably from the field to be inoculated, so as to avoid spreading diseases or weeds. Mix thoroughly, so that all the particles of soil are moistened. Thoroughly mix this earth with four or five times as much; spread this inoculated soil thinly and evenly over the prepared ground exactly as if spreading fertilizer. The inoculated soil should be harrowed in immediately to protect the bacteria from sunlight. In using this method allow 1 gallon of the liquid culture to 4 acres or less.

Either of the methods described may be used, as may be most convenient.

To prevent any possible delay, the necessary chemicals should be ordered in advance. If the local druggist does not have them in stock, he can doubtless secure them within a reasonable time.

KEEPING CULTURES FOR FUTURE USE.

The question is frequently arising as to the possibility of the farmer's keeping over cultures from one year to another by soaking up a little of the liquid culture in cotton and drying this cotton. This proposed practice is not to be advised in any case. Contaminations take place so readily, and once started spread so rapidly, that for assured good results it is absolutely necessary to start with a pure culture. The pure culture, moreover, can only be prepared by a trained bacteriologist with laboratory facilities. These cultures in the dry state will keep, under ordinary conditions, from six months to a year.

There is an additional reason, fully as important, which makes the above method impracticable. The cultivation of the bacteria for any considerable length of time in solutions containing ammonium salts rapidly lessens their infective power and their ability to gather nitrogen from the air, so that transfers or new cultures made with absorbent cotton from the cultures prepared for field use would contain organisms of reduced efficiency. It is partly owing to these factors that it is impracticable to distribute the bacteria in liquid cultures and maintain the requisite effectiveness.

In the use of cultures for inoculating soil the farmer should be guided, as in all other matters pertaining to soil treatment, by his own peculiar needs and should not give too great weight to the experiences of others whose soil conditions may differ widely. It would be unwise to invest largely in any new method for increasing plant growth, whether bacterial or of any other nature, without previously experimenting in a small way.

DANGER OF INOCULATION BY SOIL TRANSFER.

Satisfactory inoculations have been obtained by transferring soil from old fields on which the legume has been grown, but experience has shown that there are dangers incident to such methods of soil transfer which it is wise to avoid.

The source of supply of such soil should be very definitely known, and in no case should soil be used from fields which have previously borne any crops affected with a fungus disease, a bacterial disease, or with nematodes. Where a rotation of crops is practiced, it is often difficult to make sure of this factor, so that the method of soil transfer is, under average circumstances, open to suspicion, if not to positive objection. Numerous animal and plant parasites live in the soil for years, and are already established in so many localities that it is manifestly unwise to ship soil indiscriminately from one portion of the country to another.

The bacterial diseases of the tomato, potato, and eggplant, and the club-root, brown-rot, and wilt diseases of the cabbage, all more or less widely distributed, are readily transmitted in the soil; while in the South and West there are the wilt diseases of cotton, melons, sweet potatoes, cowpeas, and flax, and various nematoid and root-rot diseases which might easily become a serious menace over areas much larger than they now occupy if deliberately spread by the careless use of soil for inoculation pur-

poses. There are several insect and fungus diseases of clover to be avoided, and various diseases of beans and peas. There is also a disease of alfalfa, the "leaf spot," which is causing damage in some regions. These are only a few of many diseases liable to be transmitted in soils. The farmer should therefore be on his guard. The danger from such sources is by no means imaginary. The Department of Agriculture has had specific cases of such accidental distribution reported, and if the business of selling soil for inoculation is made to flourish by farmers purchasing without question "alfalfa soil," "cowpea soil," etc., there is every reason to believe that experience will demonstrate the folly of such haphazard methods.

Of scarcely less importance is the danger of disseminating noxious weeds and insect pests through this plan of inoculation by means of soils. Even though weeds may not have been serious in the first field, the great numbers of dormant seeds requiring but a slight change in surroundings to produce germination are always a menace. The enormous damage to crops caused by introduced insects and weeds should convey a warning and lead to caution. It is not the part of good judgment to view the risk as a slight one justified by the end in view.

PURE-CULTURE INOCULATION.

The extensive experiments carried on by the Department of Agriculture during 1904 demonstrated the fact that, by the proper use of pure cultures, the nodule bacteria are actually carried into the soil in such a way as to form root nodules, and where other conditions are favorable the inoculation thus brought about makes possible the growth of each legume in soils where it had previously failed from the lack of bacteria. The original cultures used, however, must be prepared with the utmost care and with a view to preserving and increasing their natural power as "nitrogen fixers" rather than merely to make them grow under favorable conditions. The methods devised in our Laboratory of Plant Physiology are based on well-recognized principles of plant breeding and selection, and mark a decided advance in the production of cultures for soil inoculation. The old pure-culture methods were not effective, for reasons clearly stated by Dr. Moore in Bulletin No. 71 of the Bureau of Plant Industry and by Dr. Moore and Mr. Robinson in Farmers' Bulletin No. 214.

The Department of Agriculture is continuing the work of developing types of the bacteria associated with leguminous plants, which will have greater activity, collecting from the air more nitrogen per acre than forms now common in nature or available from laboratories. It is desirable that similar investigations should be conducted with reference to the nitrogen-fixing bacteria existing in the soil independent of the legumes. Important steps have already been taken along this line, but the very large demand for cultures for leguminous crops, by consuming the time of the laboratory force, has seriously retarded these investigations during the past year.

This Department is ready to co-operate with experiment stations and commercial firms, to give and to receive suggestions, to test the product of others, and to furnish, as far as possible, cultures to be tested in the laboratory and under field conditions.

There is nothing in the nature of the processes involved which would prevent a competent bacteriologist, after some experience in this particular field, from producing cultures of as high a grade as those sent out by the Department, and every assistance will be given to competent persons desiring to undertake the work.

SUGAR BEETS.

Experiments in growing sugar beets in Montana were made as far back as 1893, when Mr. Julius C. Martin, of Evans, Cascade County, planted seed on May 12 and harvested on October 4. The beets were of the Lemaire variety, were grown in black loam without water, and averaged 15 ounces in weight. Sucrose in the juice was 15 per cent and in the beet 14.3 per cent, while the co-efficient of purity was 75. Many tests have since been made which have conclusively proven the adaptability of soil and climate for the production of this crop especially in those districts where irrigation is practiced. The greatest drawbacks to the extensive cultivation of this crop and the establishment of many sugar factories in the State are undeveloped conditions of transportation and irrigation facilities. However, in both directions there are decided improvements and extensions now under way, and when the inevitable discouragements and failures which always are present in the preliminary stages of like stupendous undertakings shall have been overcome, there is every reason to believe that Montana will take a high place among the beet sugar producing States.

Plans for installing factories in a number of localities have been maturing for several years. They necessarily move slowly from the fact that they involve many other improvements necessary to the sugar industry, such as transportation, irrigating ditches, acreage contracts, settlements, and suitable labor. Aside from the factory at Billings which is now in operation, and at Bozeman, where contracts for the building have been awarded, there are plans for factories at Hamilton, Kalispell, Chinook, Laurel, Missoula, Dillon and Great Falls.

To Billings belongs the honor of the first successful consummation of this enterprise in Montana. The Billings Sugar Company was organized June 28, 1905, with a capitalization of $750,000, which was afterward increased to $1,250,000, which represents the cost of the 1,200-ton refinery which began operations on Oct. 15, 1906. The contracts under which this plant was erected called for the very best and latest of everything known to the business, and it is considered to be absolutely the finest plant of the kind in the United States at the present time.

Ground for the Billings factory, the fifty-sixth in this country, was broken in January, 1906, and the buildings were ready for occupancy in October of the same year. The materials used in construction are concrete, stone, and brick; the main building is 68x368 feet, and four stories high; besides this there is the warehouse, 68x400 feet; boiler house, 60x150 feet; lime house,

50x150 feet, and the machine shop, 60x60 feet. These buildings stand on 190 acres of land owned by the company.

The operations of the plant will require, each year, 20,000 tons of coal; 8,000 of lime, which will be procured from Livingston; 800 tons of coke; 70,000 pounds of sulphur; 65,000 pounds of soda ash, and 30,000 pounds of muriatic acid.

To insure the building of the plant it was necessary to secure contracts with the farmers of the surrounding country that at least 6,000 acres would be planted to beets for not less than five consecutive years. These contracts were secured on 4,500 acres in Yellowstone, 2,400 acres in Carbon, and 100 acres in Gallatin counties, and this acreage was planted in the season of 1906.

Investigations made by a committee consisting of local men who are interested in the factory were the basis of an estimate that a properly tended beet field could be made to yield a net profit to the owner of $40 an acre, and this promising prospect not only was a factor in securing the contracts but had great influence upon the price of land. The one almost insurmountable obstacle which presented itself in this initial season was that of competent labor in the fields. In the original contract there is a clause by which the farmer agrees that the company may send Japanese to do all the work necessary on the crop from planting to harvesting, but the Japanese agent signed the contract so late in the season that the full complement of men could not be secured; besides which, the unusual demand for men on railroad construction and on public works was so great that there was the utmost difficulty in securing any kind of labor to perform the field work. Nearly $20,000 was spent by the management to secure competent help, but without satisfactory results. This, however, is merely an incident to be expected. As a matter of course, it proved detrimental to some growers this year, but, as in other localities which have borne the industry to success, this will be provided for in the future, and before the contracts have expired conditions will have changed to such an extent that the trials of the first year of the industry in Montana will be forgotten.

The original contract between the company and the farmers was as follows:

(ORIGINAL)
THE BILLINGS SUGAR COMPANY.
BEET CONTRACT.

THIS AGREEMENT, Made and entered into this ..... day of ..... A. D. 190...., by and between .... residing at or near ....., party of the first part, hereinafter known as Grower, and the Billings Sugar Company, party of the second part, hereinafter known as Company.

WITNESSETH, That in consideration of the covenants and agreements of The Company, hereinafter set forth, The Grower covenants and agrees with The Company, its successors or assigns:

1. That for three (3) consecutive years, beginning with 190.. he will plant, or cause to be planted, cultivated and harvested on lands acceptable to The Company,

and suitable for beet culture, ... acres of Sugar Beets on .....¼ of Section ....., Township ....., Range .....E., M. P. M.

2. That the seed used shall be only that furnished by The Company, its successors or assigns, and not less than fifteen (15) to twenty (20) pounds per acre shall be used, the same to be paid for out of the proceeds of the first beets delivered.

3. That he will prepare the said ..... acres in a thorough and proper manner and that the seed will be planted, and the beets grown, harvested and delivered according to the instructions and under the general supervision of the duly authorized agents or field superintendents of The Company, its successors or assigns.

4 That he will commence and proceed with the harvesting and gathering of the crop (which must be completed before freezing weather) at such times as the duly authorized agents or field superintendents of The Company, its successors or assigns, may direct.

5. That he will make delivery of and unload said beets at the factory as directed, or in cars at the designated receiving station of The Company, its successors or assigns, at such times and in such quantities and in such conditions as the agents or field superintendents of said Company, its successors or assigns, may direct.

6. That said beets shall be properly topped at the base of the lowest or bottom leaf, the entire crown being removed, and shall be protected, as far as possible, from frost and sun at the time of harvesting and delivery, and delivered in first-class condition, free from leaves and other trash, and will be subject to the usual deductions on account of dirt, leaves, improper topping and damaged beets.

1. The Company, its successors or assigns, will furnish the seed for planting the acreage herein specified, for which The Grower shall pay not to exceed fifteen cents (15c) per pound and, when so requested, after the ground has been thoroughly and properly prepared, will plant said seed as fast as circumstances will permit, and said Grower shall pay for such planting the sum of fifty cents (50c) per acre.

2. That said Company, its successors or assigns, will purchase all beets suitable for sugar-making purposes, grown, harvested and delivered in accordance with the terms, specifications and requirements of this contract, and pay therefor at the rates herein specified (less the usual deductions for dirt, leaves and improperly topped, or damaged beets), to-wit:

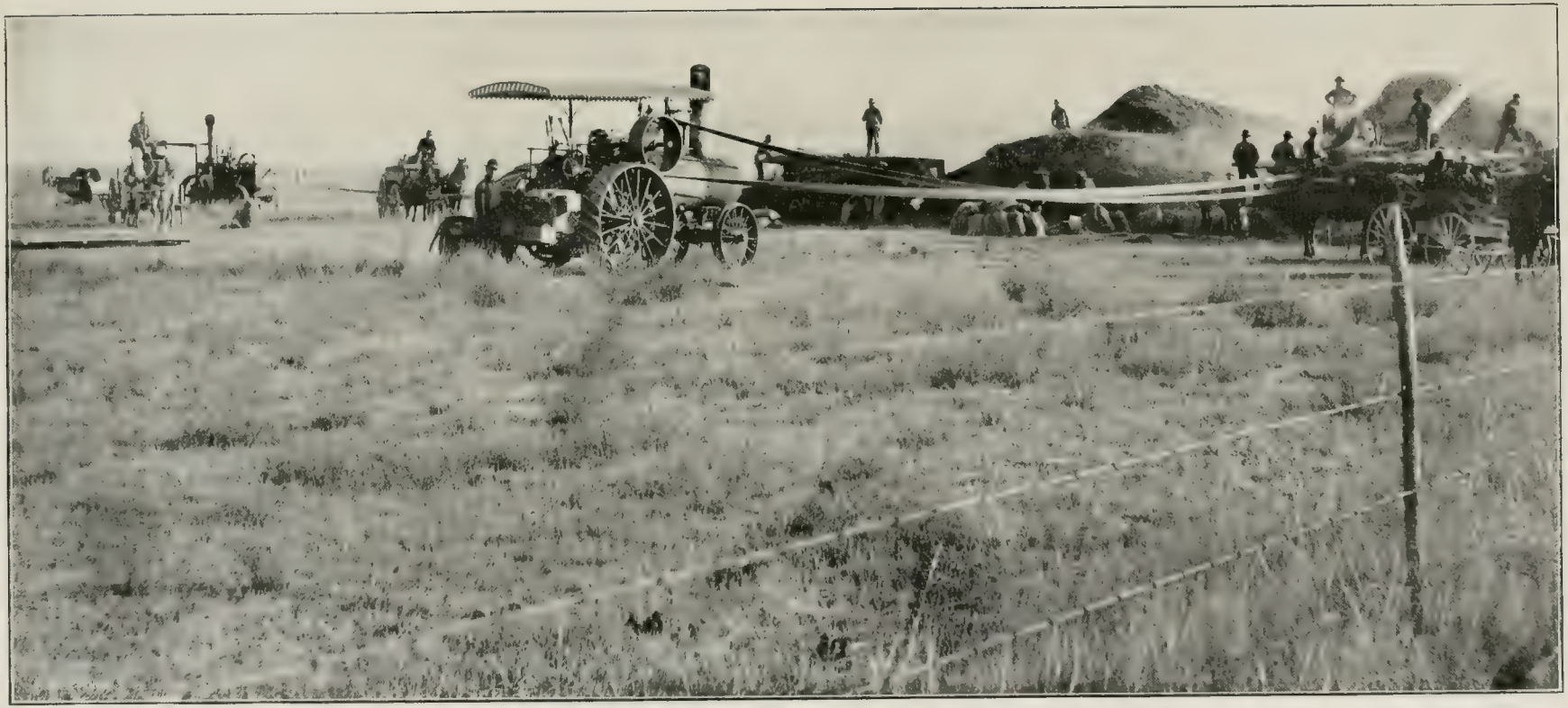
For all beets delivered at factory or designated receiving stations in good condition of eighty per cent. (80 per cent.) purity or better, and containing fifteen per cent. (15 per cent.) or more sugar, five dollars ($5.00) per ton.

For all beets in good condition of eighty per cent. (80 per cent.) purity, containing not less than twelve per cent. (12 per cent.) and under fifteen per cent. (15 per cent.) sugar, four dollars and fifty cents ($4.50) per ton.

In case any part of the beets grown on said land shall not be ordered to be delivered by the agents or field superintendents of The Company, its successors or assigns, before November 1st of any year, then it or its assigns shall purchase all such beets delivered at the factory or receiving stations aforesaid, on or after the first (1st) day of November, and up to the first (1st) day of December, in that year, of the kind and quality agreed to be purchased as aforesaid, and at the prices aforesaid. But it or its assigns shall not be bound to receive or purchase any frozen, damaged or injured beets, or beets of less than eighty per cent. (80 per cent.) purity, or containing less than twelve per cent. (12 per cent.) sugar. The purity and sugar content to be determined by the usual tests employed at the factory of The Company, or its assigns.

3. That The Company, or its successors or assigns, will make settlement on or about the fifteenth day of each month, for all beets delivered and received during the previous calendar month under this contract.

4. That to ascertain the quality of said beets, The Company, or its assigns, shall, at various times during the growing and harvesting season, and also at the time of delivery at the factory, cause the beets to be sampled and polarized in the manner usually employed by first-class factories.



A FAMILIAR SCENE IN THE COUNTRY

It is further agreed that The Grower will not assign or transfer this Contract without the written consent of The Company, its successors or assigns.

The grower further agrees that he will proceed with the harvesting of said beets as rapidly as directed by the company, its successors or assigns, and that he will silo that portion harvested or dug daily in excess of the amount delivered, by covering the topped beets as left in piles by the toppers with earth to the depth of three inches; that he will deliver the said siloed beets according to the terms of this contract.

The company further agrees to pay an additional twenty cents a ton for said siloed beets.

In addition to this there is a labor contract under which the hand work in the field is done. This is an apparent necessity from the fact that the successful operation of the factory depends absolutely upon the supply of beets. Evidently this cannot be left to chance, so the company exacts a contract whereby the necessary labor is guaranteed, payment for the same being made a lien upon the crop. Just what the results of this system will be must be left for the next two years to determine.

GROWERS' LABOR CONTRACT FOR HAND WORK.

MEMORANDUM AND AGREEMENT, Made and entered into this ..... day of ....., A. D. 190...., by and between ..... of ....., hereinafter designated as the grower, and .... of .....,hereinafter designated as the contractor.

WITNESSETH: Whereas, the grower has entered into a contract with The Billings Sugar Company for the growing of sugar beets, and is desirous of contracting with the contractor for doing the hand work on said crop; now, therefore,

IN CONSIDERATION of the sum of One Dollar in hand paid by the grower to the contractor, receipt of which is hereby acknowledged, the contractor hereby covenants and agrees with the grower to do the hand work on ..... acres of sugar beets planted or to be planted near ....., for the season of 190...., in accordance with the rules and regulations printed below and made a part of this contract.

The contractor further agrees to receive as full compensation for said hand work the prices hereinafter specified, which the grower hereby agrees to pay said contractor for said hand work as fast as the respective classes of work have been completed and approved by the Agricultural Superintendents of The Billings Sugar Company less 10 per cent, which amount is to be reserved by the grower until the crop is harvested.

For bunching and thinning	$7.00 per acre.
For second hoeing	2.50 per acre.
For third hoeing	1.50 per acre.
For pulling and topping	9.00 per acre.

The grower further agrees to furnish small houses or floored tents in which the contractor may live, and water near at hand for domestic purposes.

It is also agreed that in case the grower shall fail or for any reason be unable to pay the contractor the sum herein stipulated for his labor as aforesaid, then the same or any part thereof remaining unpaid shall be a lien upon the beets so cultivated and harvested, and the grower does hereby authorize and direct The Billings Sugar Co. to pay any sum so remaining unpaid to the contractor out of the proceeds of any beets delivered by the grower to said company.

Note—It is Agreed and Understood, That The Billings Sugar Company will furnish the contractor transportation for himself and family, consisting of ..... full fares

and ..... half fares from .... to ....., charging the grower therefor One Dollar per acre, for the acreage herein contracted.

THE BILLINGS SUGAR COMPANY.

RULES AND REGULATIONS GOVERNING THE HAND WORK ON THE CONTRACT

Bunching and Thinning.

This work is to be commenced by the contractor just as soon as the beets show four leaves and the grower has them cultivated, and must be completed as rapidly as possible in the following manner, to-wit:

On lands rich in plant food, beets to be thinned, leaving only one plant in each place, from five to seven inches apart; on lands fairly good, beets to be thinned from seven to ten inches apart. This work must be done so that the land will be entirely free from weeds.

Tools.

6-inch and 7-inch hoes will be used for thinning and hoeing.

Second Hoeing.

This work must be commenced by the contractor just as soon as the thinning is completed and the grower has finished the second cultivation, by hoeing between and around every plant, a little deeper than the first hoeing, killing and removing all weeds and removing any double plants that may have been overlooked in the thinning.

Third Hoeing.

A third hoeing must be given the beets by the contractor whenever necessary, and in the event of the beets having grown so large that a third hoeing would injure them, then all weeds that grow, up to the time of harvest, must be removed by hand, as the beets must be kept free from weeds during the entire season.

Pulling and Topping.

This work must be done just as soon as the grower receives orders from The Billings Sugar Company to dig his beets. The plowing out will be done by the grower. The beets must be pulled by contractor and the dirt knocked off, by knocking the beets together as pulled, and throwing them into piles. The ground on which the beets are to be pilled must be cleaned off and leveled down, by the contractor, on which the topped beets are to be thrown, so that the grower may fork the beets into the wagon free from dirt or rocks. And after beets have been thrown into piles they must be covered with the leaves or beet tops to protect them from sun and frost when beets are left in the field over night.

The beets will be topped by the contractor in the following manner, to-wit:

By cutting off the tops squarely just below the crown at the base of the bottom leaf.

All cultivating, irrigating, plowing out and loading will be done by the grower, unless otherwise agreed upon.

In event any portion of the above work is not being done sufficiently rapidly by the contractor and the crop would thereby suffer, the grower reserves the right to engage additional help for doing such work at a price not to exceed the price herein contracted for, and to deduct the expenses of same from this contract.

The grower also reserves the right, in event the hand work is not being properly done according to the above rules and regulations, to cancel this contract and engage others to do the work, it being agreed and understood, however, that in event of any dispute between the grower and contractor as to the interpretation of the above rules and regulations, as to the manner in which the work is being done, or as to the necessity of additional help, the Agricultural Superintendent of The Billings Sugar Company shall act as referee and his decision shall be final and binding on both the contractor and grower.

The following letter from the company to the growers will show the class of labor to be chiefly employed in the beet fields, and the cost of hand work for each acre planted. The families referred to in the last paragraph

are Russians secured by the company from other beet growing localities in the United States.

REVISED LABOR CONTRACT.

Dear Sir:—We beg to advise that Mr. T. Eto has signed your labor contract, and has thereby agreed to do the hand work on your beet crop with Japanese men.

The labor contract you signed originally required payments for this work, as follows:

Bunching and thinning	$ 7.00 per acre.
Second hoeing	2.50 per acre.
Third hoeing	1.50 per acre.
Pulling and topping	9.00 per acre.
Total	$20.00 per acre.

We have made arrangements with Mr. Eto whereby the payments due for the first three classes of work are less than stated above, while the payment for pulling and topping is greater, and accordingly, we have taken the liberty of changing the terms of your contract to read as follows:

Bunching and thinning	$ 5.00 per acre.
Second hoeing	2.00 per acre.
Third hoeing	1.00 per acre.
Pulling and Topping	12.00 per acre.
Total	$20.00 per acre.

Inasmuch as the total amount for the hand work remains the same, we have assumed that there would be no objection to our altering the terms of your contract, as described above, since the change requires the payment of a less amount prior to the harvest time.

Mr. Eto is in charge of the Japanese men who will do your field work, and he is the "Contractor." By the terms of your agreement, you should see to it that all payments for the work of his men are made direct to him, personally, and his receipt procured for same. Payments should be made to no other person, except on Mr. Eto's written order, and in such cases, you should retain both the order and payee's written receipt.

While all of these laborers will be instructed as to how the work of thinning should be done, the distance to which the beets should be spaced in the row, etc., we wish to advise that it is impossible for us to supervise their work except in the most general way. While your beets are being thinned, it will be necessary for you to occasionally inspect the work and see that it is being done properly. If you neglect doing this until your thinning is completed, it will, of course, be too late to put back plants if too many have been cut out. However, in justice to the men who are to do your work, we will say that we believe that they have no desire to do otherwise than directed, but if any should be lax or careless in their spacing, the only time to correct this fault is while the work is in progress.

Owing to the lateness of the season, Mr. Eto has not yet brought in his full number of men. If for any reason he should fail to provide enough men to handle all the contracts which he has accepted, we will supply families wherever necessary according to the terms of the original contract. Very truly yours,

BILLINGS SUGAR COMPANY.

Bulletins issued from time to time containing general instructions regarding preparation of the soil, planting, and caring for the crop will be found to be of service to those who intend to engage in beet culture, as they are based on conclusions which are the result of special study of Montana soil and climate, and therefore applicable to other valleys as well as the Yellowstone:

SELECTION OF LAND.

It is of the utmost importance that care be exercised in the selection of your beet land, and that only your best land be used for this crop. Select land with good drainage and which lies well for irrigation. Lands where alfalfa, potatoes, corn, peas or beans have been grown the previous year are better adapted to the beet crop than grain lands, as the foregoing crops do not exhaust the soil to such an extent. However, the best beet crops are usually obtained from land broken from alfalfa, provided the seed bed is thoroughly and properly prepared, and from grain and potato land which was broken from alfalfa the year previous.

LAND TO BE AVOIDED.

Avoid land that contains alkali in sufficient quantity to prevent the successful growing of other crops; or new, heavy adobe land; or hot, gravelly land; or land that is so wet that it cannot be properly cultivated; or timothy or blue joint sod. Serious consideration should be given this matter, as it costs more to grow beets on poor land than on good land, and the poor land yields smaller returns.

FALL WORK.

All land not rich in plant food should be manured, applying from eight to ten big loads per acre, spread evenly over the soil. In general all land which has never been in alfalfa, or which was broken from alfalfa two years or more ago, should be manured if a good tonnage is expected. The manure should be applied at once and plowed under in the fall.

Both in general and in particular (except in a very few instances) we urge fall plowing. The farmers who do their plowing in the fall will find themselves able to get their ground in shape for early planting, thus getting the advantage of a long growing season. Furthermore, the action of the frost on the plowed land is a great help toward getting a finely pulverized surface, which is essential to an excellent seed bed.

The best results are obtained from ground plowed to a depth of eight or ten inches.

FALL LEVELING.

Since the beets must be irrigated through the furrows between the rows, it is apparent that unless the field is perfectly leveled part of the beets will suffer for want of water, and others will be damaged by having too much. Accordingly, if any fields are uneven enough to require a second plowing after leveling so as to insure a sufficient depth of plowed ground all over, the same should be done in the fall.

ALFALFA LAND.

Splendid results are usually obtained where the third crop of alfalfa is plowed under before the same is cut. This is most practicable where the ground is quite smooth, so as to need but little leveling. In such cases it is best to plow as deeply as possible, being careful to adjust your plows so as to cut all the roots and to get the tops turned under and well covered.

In preparing alfalfa stubble, plow three or four inches deep. After the alfalfa roots or crowns thus turned up have begun to dry, harrow well and get them all out on top. A spring tooth harrow is an excellent tool for this work, though it can be well done with a steel frame lever harrow. When the roots which have been harrowed out on top have dried, plow again eight or ten inches deep and let it lay until spring. Do not allow stock to run over your plowed ground if it can be avoided.

MISCELLANEOUS LAND.

In preparing grain stubble plow eight or ten inches deep, being careful to turn under and cover all straw.

In preparing corn land remove all stalks before plowing, as they will interfere with cultivation.

Ground which has yielded a good crop of potatoes may usually be relied upon to yield a good crop of beets if properly worked. Unless it is very rich it can, of course, be made better by adding manure, but otherwise it needs only good, deep plowing.

SPRING WORK.

Where the land was fall plowed begin leveling just as soon as the ground will work, running the leveler crosswise while the ground is moist, thus filling all the low places with moist soil, but be careful not to work the ground too wet.

Where fall plowing has been done, the farmer should plow just as early as conditions will permit, from eight to ten inches deep. On real heavy land, however, it is often advisable not to plow more than one or two inches deeper than the land was plowed before, as the new soil thus turned up on the surface will lack the elements required for a quick germination of the seed and a rapid growth of the young beets. In such cases it is better to plow about the depth of the former plowing, following with a sub-soil plow to a depth of ten or eleven inches.

Before plowing stubble land in the spring it is often advantageous to disc or harrow the ground, as it will then plow better, and besides you will have a quantity of fine soil underneath the fresh plowing.

When the land has been properly leveled run a steel frame or lever harrow over it once or twice, then if the soil has been thoroughly pulverized let it lay until one or two days before planting, giving the weeds a chance to grow. If the weeds have only just started when you want to plant set your harrow deep and weight it down so that it will go in nearly to the frame and harrow crosswise twice; then set the harrow light and run over once more, twice if necessary, the same way. This manipulation will destroy the weeds if they have just begun to grow and the land is ready for seeding and should be planted at once.

In case, however, the weeds have grown so much that the harrow will not kill them it will be necessary to use a disc harrow, lapping it one-half in order to leave the ground level. In some cases it may be necessary to go over the ground with a cultivator, and in extremes cases, as where wild oats

are very thick, to plow lightly to destroy the weeds and wild oats, which must be destroyed before planting. However, in event it is necessary to use either of these latter tools, a harrow should follow immediately, working the land down to a perfect seed bed and not allowing it to dry out between the times of working it with the different tools. You must be careful in this matter, as it is imperative to retain the moisture in the surface of the soil.

On all spring plowing it is important that you level and harrow the land as fast as it is plowed. If you are preparing a small acreage, using only one team, you should unhitch from the plow at least twice a day to level and harrow smooth, so that you may secure a fine seed bed which retains the moisture near the surface. For this reason it would not be advisable to work the land during a heavy wind storm.

Don't be afraid to use the leveler. On the majority of lands it is the most efficient of all tools, not only for leveling, but for getting the surface of the seed bed just right.

We wish to impress upon the mind of every grower the imperativeness of two things: the first is, getting your land in a fine level and smooth condition to receive the seed, so that you may get a good stand of beets, as your success with the crop will depend largely upon securing a good stand; the second is, getting this done just as early in the season as possible, thereby giving the weeds a chance to grow, so that they may be effectively destroyed. You will also have the advantage of being ready to plant at any time you may wish or when the conditions are just right. With such an object in view you can easily see the advantage to be gained by getting all your plowing done in the fall.

SPECIAL TOOLS REQUIRED FOR PREPARING LAND.

It is very essential that each grower should have a leveler and clod crusher. Such a tool can be constructed by taking two pieces of lumber, two by eight inches, sixteen or eighteen feet in length for the sides, and three pieces two by eight inches, seven feet long, for the cross-pieces. Set the front cross-piece back about ten inches from the ends and on an angle of about ten degrees; the center cross-piece perpendicular; and the rear cross-piece on an angle of thirty or thirty-five degrees and two feet from the rear ends of the sides. Nail together well, or bolt together, bracing each corner stoutly.

Each grower should have also a steel frame disc harrow and a steel frame lever harrow.

IMPORTANCE OF EARLY WORK.

Don't be afraid that you will be the first to get your ground in readiness for planting. Those who are among the first to get a good, fine seed bed may congratulate themselves on having made a good beginning toward obtaining a large yield and an early maturing crop. If you are preparing alfalfa land and succeeded in getting only the first plowing done in the fall harrow the roots up on the surface with a spring tooth harrow or a steel frame harrow, set to run deep, then plow them under as soon as they are thoroughly killed.

After finishing the preparation of the seed bed, let it lay until the time

for planting arrives. This will give you an opportunity to kill all the weeds which may come up, before planting.

SEEDING.

The time for planting will be governed by the season and condition of the soil, commencing about April 1st, if the season and conditions are favorable. The planting will be done by Seeders furnished and operated by our company, at a cost of fifty (50) cents per acre. Our Field Superintendents will select Drillmen in the different localities where the beets are to be planted, who have good teams and can drive straight rows. Each Drillman will be given about 100 acres to plant, and will receive special instructions in regard to operating the seeder, so that all the seed may be properly planted. The seed will be planted from one-half to one and one-half inches deep in rows 20 inches apart, early planting being shallower than late planting, and using not less than fifteen pounds of seed to the acre. This is necessary in order to secure a good stand of beets. Our Drillmen will also be instructed not to plant any land until the seed bed is properly prepared.

CULTIVATION.

If weeds begin to show after planting and before the beets are up, the first cultivation should be done by harrowing "light" across the rows. This work will be very effective toward killing the weeds and will not hurt the beets unless the harrow is set too deep. If the surface of the ground has become crusted since planting, harrow crosswise "light" or roll with a corrugated roller, thus breaking up or removing the crust, in order to permit the beets to break through. This must be done before the beets have time to curl underneath the crust, and should be done very lightly so as not to disturb the beets or sprouts any more than is absolutely necessary.

A cultivation is also necessary just as soon as the beets are large enough so that the rows can be plainly seen, using a Planet Jr., Deere or Moline beet cultivator, made expressly for this purpose and provided with all the tools and attachments. For the first cultivation, use the disc weeders and the duck feet, running same shallow, cutting out all weeds and stirring the soil generally between the rows. In case the ground should become crusted as a result of rainfall after this cultivation, it may be necessary to cultivate again just before thinning, as loosening up the soil will enable the thinners to do faster and better work.

Another cultivation will be necessary in a week or ten days after the beets are thinned and have straightened up again, using weeding knives and duck feet, without the weeding discs, taking great care not to cover or in any way injure the plants. If the land is weedy a third cultivation will be necessary about a week or ten days later. Just as soon as the ground begins to get dry, the beets look dark and show signs of needing water; they should be furrowed out between every other row, if the land is flat, and between every row, if the land is sloped so that the water will not soak well, and watered at once. As soon as the land dries sufficiently to work without injury to the soil, it should be cultivated again by using bull tongues and duck

feet. This should be done after each irrigation until the foliage of the plant is so large that it will be injured; then cultivation should cease.

THINNING.

Thinning should commence as soon as the beets show four leaves, and should be completed within two weeks after such time, that is, all beets should be thinned within two weeks from the time they show four leaves. Unless this is done the beets will entwine about each other, which causes great injury to the remaining plants during the process of thinning. This work should be done in the following manner:

The "bunchers" or "blockers," using six and one-half or seven-inch hoes, shall space the beets in the row by cutting out the entire row for the width of the hoe or a little more, leaving either single plants (the strongest and healthiest) or bunches of plants, as may be necessary, from eight to ten inches apart in the row on strong, rich land, and from ten to twelve inches apart on the land which is fair. The thinners will follow the "bunchers" or "blockers," and will pull out all but one plant in each bunch, taking great care, however, to leave the strongest plant in good condition and removing all the weeds around it.

A second hoeing will be necessary just as soon as the beets are again cultivated after thinning hoeing around the plants and pulling out any double plants which may have been overlooked at the time of thinning, and removing all weeds that may have grown up in the meantime. In some cases where the land is very weedy and the beets have not grown so large that hoeing would injure them, a third hoeing will be required. If the beets have grown to such an extent, however, that they might be injured by a third hoeing, the weeds must be removed by hand, as it is imperative that the field be kept clean and free from weeds from the time of planting until the time of harvest, if the best results possible are expected.

FIRST IRRIGATION.

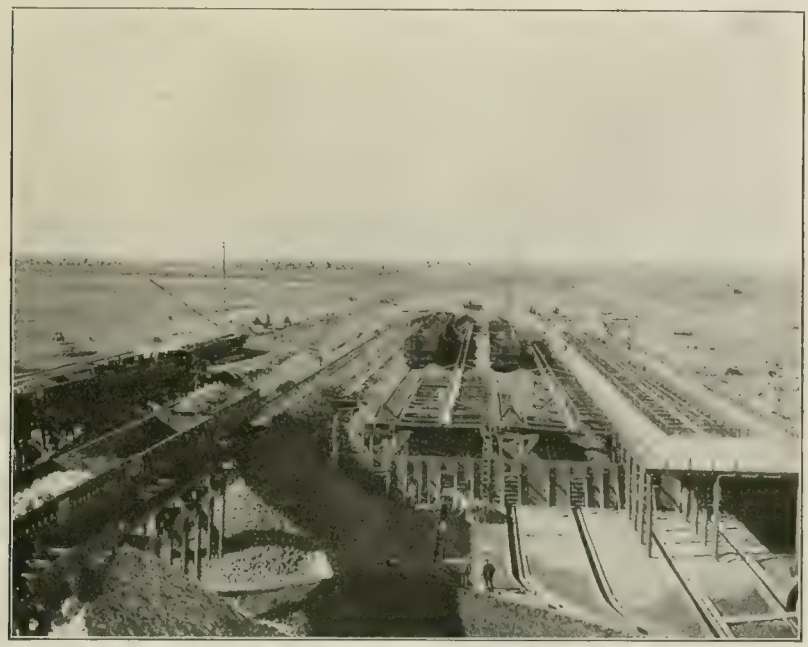
The first irrigation should commence as soon as the ground begins to get dry, and the beets show a considerably darker color, and wilt perceptibly during the day. This should be done by running a little water down each furrow until the ground is moist around the beets, being careful not to flood them where it can be avoided, and not to allow the water to run longer than is necessary to moisten the ground around the beets, as it is an easy matter to injure the beets by giving them too much water while young. For this reason, it is advisable to shut the water off the field at night, doing all the irrigating in the day time, unless the crop should be suffering considerably, especially when the beets are young. Where the land is flat do not run the water more than sixteen or eighteen rods in one stretch, but use cross ditches, running it from one to the other. Where the land has greater fall, the cross ditches, or headers, may be a little farther apart.

SUBSEQUENT IRRIGATIONS.

Care should be taken not to water the beets a second time until required,

which will vary in time, according to the climatic conditions and the nature of the soil; but, at the same time, it should be borne in mind that the crop must not be allowed to suffer for moisture between any of the irrigations during the growing season, as where beets stop growing for want of water, and then start again, they are injured in regard to both quality and quantity. The best results are secured where a constant normal growth is maintained from the time of planting until the time for same to mature.

Our Field Superintendent will advise you upon this subject of irrigation



VIEW OF THE SUGAR BEET SHEDS AT THE BILLINGS FACTORY.

from time to time during the irrigation period, if requested, and also upon all other matters pertaining to the cultivation of the crop.

Those of you who get your beets in early will find that they recover more quickly after thinning, because the sun is not so hot early in the season as it is later; the beets will be larger at the time of the first irrigation and can accordingly be watered more easily; the tonnage will be heavier on account of the crops having had a longer growing season; and there is every possibility of the crop reaching maturity at a time to permit you to be among the first to begin harvesting. Besides these advantages, if you get a good, early start, you are in a position to keep your work well in hand and will be able to give the same proper attention much more easily than if you are behind.

OPERATION OF THE SEEDER.

Be careful to see that the press wheels are set low enough to properly press the dirt on and around the seed. Watch this closely and see that the little furrow made by the runner is entirely closed upon the seed with a depth of from one-half inch to one and one-half inches of pressed dirt. The

depth, of course, depends upon the moisture in the soil, but do not exceed one and one-half inches in depth.

See that the scrapers on the press wheels are run so as to keep the wheels as clean as possible. If the press wheels are allowed to gather dirt, it will raise the runners out of the ground. And it is also essential that you keep the main wheels entirely clean, for if they are allowed to gather dirt, it will carry your whole drill out of the ground.

On account of the largeness of the seeed you will probably find it necessary to set the indicator for from twenty to twenty-five pounds, in order to plant sixteen or seventeen pounds to the acre. Each grower has been supplied with seventeen pounds of seed per acre, and we think it advisable to plant that amount. Watch the seed sprouts carefully and see that the seed is always feeding regularly through each of them.

Always lift the runners out of the ground by means of the main lever before attempting to turn at the end of the rows.

PRESENT DEVELOPMENT OF THE BEET SUGAR INDUSTRY IN THE UNITED STATES.

The interesting statistics here given of the condition of sugar production and consumption in the United States are taken from Report No. 82 issued by the Department of Agriculture, and they show in the most graphic manner the rapid progress and the future possibilities of this great industry.

BEET-SUGAR FACTORIES BUILT OR BUILDING IN THE U. S. MARCH, 1906.

STATE	Number	Capacity	STATE	Number	Capacity
In Operation.		Tons.	Now Building.		Tons.
California	6	8,400	Arizona: Glendale	1	800
Colorado	12	9,200	California:		
Idaho	3	3,000	Visalia	1	350
Illinois	1	350	Hamilton	1	1,000
Michigan	16	10,550	Colorado:		
Nebraska	2	1,450	Brush	1	600
New York	1	600	Fort Morgan	1	600
Ohio	1	400	Swink	1	1,000
Oregon	1	400	Idaho: Nampa	1	600
Utah	5	4,000	Kansas: Garden City	1	1,000
Washington	1	500	Montana: Billings	1	1,200
Wisconsin	1	1,700	Minnesota: Chaska	1	600
			Michigan: Charlevoix	1	600
	52	40,550	Wisconsin: Madison	1	600
Not Operating.			Total factories now building	12	9,150
California	1	1,200			
Michigan	3	1,700	Grand Total for the U. S.	68	52,600
Total Not Operating	4	2,900			

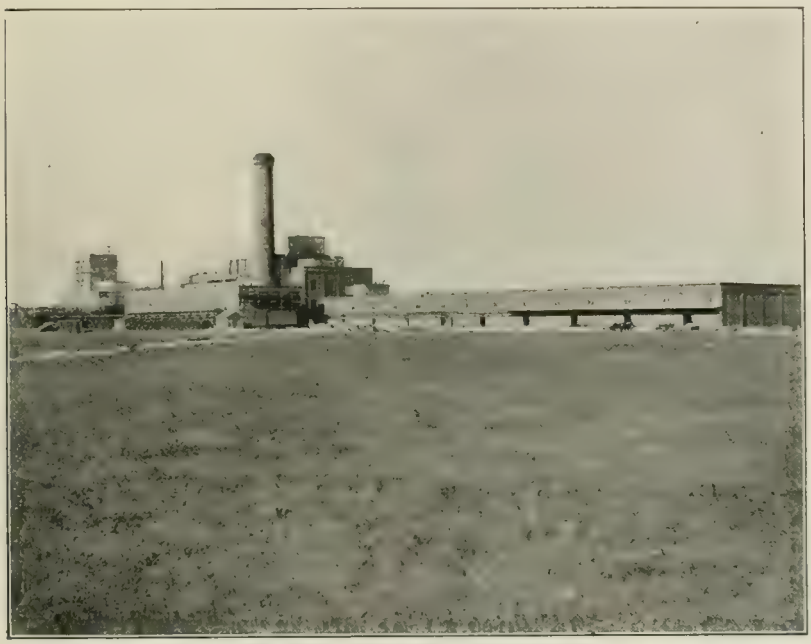
Some of these factories work 150 days in a campaign and others but 45. Assuming that all worked under normal conditions and made average campaigns of 100 days the 68 factories listed would work in a season 5,260,000 tons of beets; the farmers would receive for beets at the usual average price $26,300,000, and would pay for labor at least half this amount, or $13,150,000.

At a fair estimate, these factories have cost investors $52,600,000, for lands, railroads, irrigating ditches and livestock; and in other supplemental investments the beet sugar companies have expended on a fair estimate $12,-

137,500, making their total investment $64,737,500. They employ a working capital of $26,300,000, which added to their total permanent investment makes total capital used in the beet sugar industry, at the present time, of $91,037,500.

These factories use 1,052,000 tons of coal annually, valued at $3,156,000, and 526,000 tons of lime rock, valued at $1,578,000. No estimate can be made of the amount paid for other crude supplies, the amounts paid to railroads for transportation, nor the investments by growers in land, tools and preparation for the business of growing beets, nor is there any possible method of estimating the value of the benefit conferred on subsidiary enterprises and general mercantile business.

In the following compilation of facts and figures is shown the magnitude



THE BILLINGS SUGAR FACTORY.

of the sugar industry of the United States, including the production of both cane and beet sugar. To portray the condition in the area west of the Mississippi a careful estimate is made of the production for 1906, including the new beet sugar factories which began operations that year, and assuming that all these factories were run at their full capacities for campaigns of 100 days, assuming also that the production of cane sugar will be the same as in 1905. This estimated production for the area west of the Mississippi River for 1906 exceeds the estimated consumption of sugar for the same area for 1900 (the last date for which there are reliable figures).

This furnishes a striking demonstration of the rapid growth of the beet sugar industry in this area. The estimated sugar production in this territory for 1906 is about 28 per cent greater than the actual production for 1905. That this increase is within the range of possibility is evident when it

is remembered that in this area at least 10 new factories began operations in 1906, increasing the total number to 40, and that the total capacity of all the western factories will be increased about 29 per cent.

It would, of course, be more satisfactory to compare the estimated production of sugar for 1906 with the estimated consumption for the same year, but this seems impracticable owing to the absence of population statistics for any year later than 1900, the last census year; therefore the 1900 figures are used for population and consumption of sugar.

It should be borne in mind that since the census year there has been a considerable increase of population in this western half of the country, and a corresponding increase in the consumption of sugar, so that the actual excess of production over consumption must be less than is shown by these figures. In a report for 1901 a similar comparison was made, using the actual figures for production of that year, the result being that the total production of the whole country was 442,000,000 pounds less than the consumption west of the Mississippi alone for 1900. If the estimates made for 1906 are realized, the total production of the whole country will be 369,000,000 pounds more than the consumption west of the Mississippi in 1900, an increase of more than 810,000,000 pounds (405,000 short tons) in five years.

In 1900 the 243,329 people in Montana consumed 16,643,703 pounds of sugar, or more than 64 1-2 pounds per capita, with no production. At the same ratio the consumption in 1906 was 18,060,000 pounds, while the estimated production is 26,400,000 pounds. This production will doubtless be doubled by the operations of the Bozeman plant in 1907. This table shows the total production of sugar in 1906:

Estimated Total Production of Sugar in the United States in 1906.

	Pounds.
Beet sugar production west of Mississippi River.....	783,200,000
Beet sugar production east of Mississippi River.....	254,100,000
Total beet sugar production	1,037,300,000
Total cane sugar production	766,080,000
Total sugar production	1,803,380,000

As the estimated consumption of sugar west of the Mississippi in 1900 was 1,433,929,503 pounds, it will be seen that the total estimated production of the whole country exceeds that by a little over 369,450,000 pounds, or 184,725 short tons. These figures show the rapid progress that is being made in supplying the entire home demand for sugar.

The development of this industry during the past few years has been of a substantial and progressive character. No factories have been installed on guesses or assumptions in regard to the conditions. During the past five years factory building has extended wholly in response to needs and developed conditions. Every new factory has been built to meet a demand induced by actual production of beets for factory use, and, established in this way, they move along smoothly and regularly from the start. During the

first season there is always to be anticipated more or less friction and drawbacks due to the adjustment of conditions, and this was true of the Montana refinery. After the experience of the first campaign, relations will be established and the future of the factory is assured.

A FIELD OF SUGAR BEETS IN THE YELLOWSTONE VALLEY.

FARMERS' ORGANIZATIONS.

Interest in organizations among farmers in Montana has been rather spasmodical during recent years, rising in localities to an extent which made every farmer in the county a member, and then for various reasons or no apparent reason whatever, falling completely out of sight. There are now in active operation locals affiliated with the Farmers' Protective Union, the American Society of Equity, the Farmers' Alliance, the Society of Montana Farmers, and the Montana Farmers' Union besides some that do not belong to any of these general bodies. All are struggling for a common end and all are cognizant of serious wrongs that clamor for redress. It is not the purpose of this article to discuss either the necessity or the advisability of union among the farmers, farther than to say that unless the necessity is soon recognized, conditions will obtain which will destroy the last vestige of the agriculturalists' boasted independence and place them absolutely at the mercy of the middlemen and the railroads. To prove this but two recent incidents need be cited. The offer of buyers of forty-three cents a bushel for a large part of the wheat crop of Fergus County, and the loss of from two to four cents a pound on the wool clip of 1906, through a reputed agreement among eastern houses. For many years organized labor has appreciated the great good that would accrue from a union of farmers and other toilers, and some effort has been made to effect such an organization. Present indications point to much greater success in this direction than has attended former efforts, as the farmers themselves begin to realize the community of interests between the producer and the consumer, and the injustice of allowing the middleman who produces nothing to dictate prices both ways to the men who produce everything.

The latest and most active organization to make an appeal for united effort to secure better conditions is the Montana Farmers' Union, organized in Cascade County in 1905. Aside from its general plan of organization, it proposes to bring all farmers' societies together for united, harmonious action, without interfering with their local objects and administration. Although it provides for local unions in unorganized localities, it also provides a general organization where all can unite in representative convention to consider and act upon subjects of common and general interest to all the organizations in the State. Of course, the organizations uniting for action must not be hostile to the objects of the Farmers' Union, but the principles of the parent body are couched in such general and comprehensive terms as to leave no farm interests incapable of concerted action with them. Recog-

nizing that if the farmer has good roads, good legislation and fair freight rates he can take care of the rest of his business himself without foreign intervention, these matters are especially mentioned in the preamble of the organization. Its local bodies are called districts, and the general state organization is The Montana Farmers' Union, a representative body composed of delegates from affiliated districts and other organizations. Local affairs can be conducted at a farmer's home in the district meetings, while matters requiring united action are cared for in a general convention. The objects of this organization are: To secure and maintain good roads, good markets, good legislation, fair freight rates, and the full, fair, free, impartial, honest and truthful discussion of farm topics from the farmer's standpoint, and to disseminate the same through speech and through the press by persons who are acquainted with and friendly to the farmer's needs; to oppose the circulation of inexact and false statements among farmers; to establish justice for and insure the welfare of Montana farmers, and to secure the prosperity and development of Montana agriculture.

This union in its primary territorial organization consists of each rural school district in Montana, and each district is known by the number of the school district with the name of the county attached.

The legal voters for school purposes in each rural school district who are practical farmers and who endorse and advocate the above objects, constitute the membership of each district organization.

Each district shall elect its own officers and is entitled to four delegates to this union, and the representation of all organizations to this union shall be practical farmers and shall endorse the objects of this union.

No initiatory fees or subsequent dues are required as a condition to membership in the districts or in this union, but all money raised for the proper and legitimate expenses shall be by voluntary contribution.

Hostile to none, friendly to all, we invite hearty co-operation among, and offer on our part hearty co-operation with, all national farmers' organizations acting in the State for securing the objects of this union, and of all organizaton working for the interest and development of Montana farming, and for the prosperity and welfare of Montana farmers, to the end that Montana agriculture may be placed upon a firm and prosperous basis in the hands of its friends, and that the representatives of the first and most essential of all employments shall occupy a due and proper place in the councils of the State and Nation.

The close observer of conditions in Montana cannot fail to be impressed with the fact that the method or rather the lack of method in marketing farm products is greatly to the disadvantage of the farmer. Improvement is noticeable in the localities where organizations of farmers are in existence, but there is too little attention paid to the importance of packing and preparing fruit, berries, and other produce for market, as well as to the time and manner of marketing. That this affects both the demand and price cannot be doubted. It is a common thing to see prices hammered down in producing sections to such an extent that farmers will not offer their produce on the market at all,

while the people of a non-producing locality must be content with eastern or western produce at abnormally high prices. This may and probably is due to a large extent to unfavorable freight rates, but it is also true that a strong, active organization of growers and shippers can enforce a demand for relief from these conditions that will ameliorate them perceptibly, and at the same time bring the producer and consumer into closer relations to the material advantage of both.

Then there is the condition and appearance of the package offered for sale. It does not require an expert to distinguish the average Montana package from that put up in other states. The time and money required to make a neat, attractive package is not lost, as the packer who is careful and painstaking in this direction will soon discover.

To sum the matter up, there should first be a strong organization among the growers with proper facilities for gathering and rapidly disseminating all necessary information regarding supply, demand, prices and general conditions, and secondly a friendly rivalry among the members of the association in making the packages not only attractive but absolutely true to name, honest in weight or measure, and packed in such a manner that they will reach the market equal if not superior in condition to any others.

There are sections of this State where the consumers never have an opportunity of purchasing a home-grown apple or berry, while at the same time car loads of the former are packed for export and millions of dollars' worth of farm produce is shipped into the State annually. It is for the farmers themselves to remedy this condition of affairs, and experience here and elsewhere has proven that the most effective way to accomplish this is through an energetic organization along co operative lines.

THE FARMERS' UNION OF CARBON COUNTY.

This union was organized by Mr. George W. Dawson, a farmer living a few miles from Red Lodge, during the winter and spring of 1904. Its membership has been as high as 1,000, and it is the only farmers' organization affiliated with the State Federation of Labor.

Concerning its operations and the necessity for such an organization, Mr. J. L. Maryott writes:

"Some of the immediate benefits accruing to the membership was in the purchase of binder twine and sacks, and in the sale of the milling wheat of the county. Although the local dealers in Carbon County insisted that twine would be worth 16 cents and perhaps 17 cents, the union, through the business agent, was able to deliver it through the county for 12 1-2 cents. In 1905 the best twine was bought at less than 12 cents, and in 1906 at 11 1-2 cents. Burlap sacks were bought for 6 1-4 cents.

"Wheat produced by members of the union was sold to local millers at from $1.46 to $1.60 a hundred-weight, while at the same time unorganized farmers of Yellowstone County received only from $1.20 to $1.25 for their wheat."

"These are but a few instances of the advantages derived by the farmer

BIG THINGS DOING ON A BIG SCALE IN A BIG COUNTRY

from organization. Although the boys with the sidewhiskers set the prices on that which the farmer produces as well as on that which he consumes, there is still much to be gained in the way of a square deal if all or a large number of the farmers of a community stand together. Frequent meetings of the farmers of a community for the exchange of ideas and mutual help, promote a neighborly feeling and make life more worth living.

"We are often told that we should be satisfied, that we are getting a fair deal, and that the five or six billions added each year by the products of the soil to the wealth of the world is prosperity unprecedented. Truthful statements of this character should go farther and say that this total product divided among the farmers and farm laborers in the United States would net a per capita yearly wage of $385, exclusive of any recompense for the labor performed by the women and children of the farms in helping to produce the enormous total.

"They should also tell of the interest on the average farm investment, which at 6 per cent would amount to $213, and such expense items as taxes, binder twine, sack, machinery repairs, and many others. People who counsel contentment and a do nothing policy to the farmer have probably never gone far enough into the twelfth census report to discover that the yearly products of 55 per cent of the farmers of this great land of ours amount to less than $250, but these and other facts may enlighten them as to the reason for the existence of the Grange with a membership of 800,000, the National Co-operative Farmers' Union in the southwest with 600,000 members, and the American Society of Equity with 500,000 more, with the work of organization still rapidly going on.

"The people of the United States may yet realize that the farmer is about to demand his rights."

As an adjunct to the Carbon County Farmers' Union, the Montana Co-operative Mercantile Association, with a capital stock of $50,000, was formed in Red Lodge in 1904, under the special laws of Montana governing co-operative associations. These laws provide that shares may be of the par value of $10 and multiples thereof up to $500; that no person may own, manage or control more than one share; that each shareholder is entitled to but one vote irrespective of the value of his share; that shares may be paid for in installments if desired, and that the stock shall be non-assessable, non-transferable and non-attachable.

The purpose of the incorporators was to establish a place of business in which to obtain for the shareholders a cash market where products can be bought and sold at the best possible advantage. A fair profit is expected upon each transaction with shareholders and others, and accumulated profits are rebated to the former. The company was not established to antagonize any existing institution, but to save profits to the shareholders. It is proposed eventually to manufacture every article that can profitably be made in the locality.

On November 20, 1905, the association bought the business of Albert

Budas and has since conducted general merchandizing with marked success, employing five and six persons.

A carload of binder twine was disposed of during the fall of 1906 at 11 1-2 cents a pound. Officers and directors of the association are: Thomas Northey, president; A. N. Whittington, vice president; W. R. Crockett, treasurer and manager; J. L. Maryott, secretary, Roberts, Mont.; T. A. Hunter, J. A. Caldwell, P. C. Hicox and George Sproule.

A "RIP SNORTER" TO SADDLE.

CREAMERIES.

The extreme measure of success which has come to many though not all of the creamery enterprises which have been launched during recent years is certainly highly gratifying to those who have persistently advocated the introduction and extension of this industry.

Causes which have operated to prevent universal success in every locality

THE TOWNSEND CREAMERY.

where a creamery has been started may be summarized in three words, "Lack of cows."

There is no gainsaying the fact that considerable money has been expended in the building and equipment of creameries that was worse than thrown away because proper attention was not given to this essential detail. For, not only is this investment idle and misplaced, but in the localities where failures have occurred, the industry has received a blow from which it will perhaps require years to recover, and this without regard to the fact that the location may be an ideal one for the business. No axiom is more self-evident than that a creamery cannot be successful, or even operate at all, without a generous supply of cream; and yet there are a number of instances where practically no effort was made even to ascertain the available supply, or even

that any cream at all could be had. Failure in such cases was swift and inevitable, and there remains now but one method of procedure, which is to do at this late day what should have been the very first undertaking—secure the necessary milk supply. This does not mean that the number of cows milked should equal the entire capacity of the plant though it should be remembered that the fixed charges of operating on a small supply are practically the same as when running to capacity, but an effort should be made to secure a fixed and reliable amount of cream during the whole season, and care taken that the amount be increased until capacity is reached. Even if this involve the purchase of milch cows by the creamery company, it is better than allowing the plant to remain idle. Besides, the record of these animals will furnish an irresistible argument in inducing neighboring farmers to engage in the dairying business. More care should also be exercised in the preservation and publication of data regarding individual performances of animals, as this information is of the greatest importance in establishing the superiority of Montana as a dairying state. At present very little data of this kind is available. In pleasant contrast to the few instances of dissatisfaction that have arisen from the one cause above noted are the brilliant achievements of by far the greater number of creameries now operating in the State.

The demand for the product of these institutions is great and growing, and while a long way from being equal to consumption, there is not an ounce of surplus creamery butter produced. Instances of returns of $100 and upwards in cash each month from a comparatively small number of cows, say from seven to twelve, are common, and the communities are correspondingly benefited.

Climatic and forage conditions are of the most favorable character for the enormous development of this industry, which so readily adapts itself to general farming, and the future will surely see Montana occupying a high position as a dairying State. As before noted, the most serious and in fact the only drawback is lack of cows, and simply education in the certainty of adequate returns to those who prepare themselves for the business is necessary to overcome this.

There are now cheese factories at Kalispell and Manchester, while the creameries are distributed about the State as follows: Chinook, Townsend, Columbus, Whitehall, Helena, Butte, Cascade, Belt, Eden, Farmington, Armington, Deer Lodge, Corvallis, Woodside (2), Darby, Hamilton, Plains, Hall, Bridger, Red Lodge, Clyde Park, Central Park, Kalispell, Moore, and Cottonwood. The Billings creamery, one of the most successful in the State, was recently destroyed by fire, but is now being rebuilt. The creamery at the Agricultural College, Bozeman, not included in the above list, is in active operation, being supplied wholly from cows on the College farm.

When it is remembered that this development is the result of less than five years' effort in this direction, its friends and promoters may be pardoned for being optimistic.

The total investment in the twenty-seven creameries and two cheese factories now in operation in the State is approximately $100,000, and the volume of their combined yearly business exceeds $500,000.

LIVESTOCK.

Contrary to the expressed opinion of a number of Montana stockmen, the terrible exposures of packing house and beef trust methods has not seriously affected the livestock interests of the State. It is true that the future operations of the new law regulating inspection may in some measure be detrimental to growers who are less careful of their stock or who do not possess the advantages enjoyed by Montana stockmen, but it is confidently asserted that, so far as this State is concerned, there is nothing to fear from any law of inspection or anything else that Congress in its wisdom may see fit to pass.

The high reputation of Montana livestock, won in open market against all competition, is being steadily maintained and advanced, and the surplus stocks, especially of cattle, some of which have been held a number of years after they should have been sent to market, are this year meeting with ready sale at fair though not exorbitant prices. The great changes in this industry which have been so freely and confidently predicted by this Bureau for years, are now being rapidly consummated. Many of the large cattle companies are disposing of their holdings and going out of the business, and there is a marked tendency toward small herds of thoroughbred stock. The showing of this class of cattle at the state and county fairs in 1906 was a revelation. Various causes combine to induce this change of methods, perhaps the chief one being the altered conditions of the public range which, under the natural and permanent growth of settlement and occupation for other purposes, is fast disappearing. There are still vast tracts of land owned by or under lease to private individuals and companies, while the forest reserves maintain thousands of head of sheep and cattle, but there is not a district in the State where it is possible to secure range for any new herds, and as stated above, the range is so limited for the stock already here that the attention of the large owners is being turned to other avenues of industry. The season of 1906 promised remarkably well for the ranges, the copious rains filling all the streams and reservoirs and causing many springs to flow that had been dry so long they had been forgotten. Grass made wonderful growth and all talk of re-seeding the wornout district was stilled. However, the abnormally hot weather which immediately followed the rains stopped the growth of the grasses, diminishing both feed and the hay crop. The rains which continued through part of May and all of June caused such floods that many reservoirs upon which stockmen depended for their summer water supply were washed out and could not be replaced, and great loss and hardship resulted. All these

conditions are hastening the disappearance of former methods so common in Montana and there is little regret expressed that such is the case. Of course, there are those who look upon the public domain as their legitimate prey and have not hesitated to occupy and fence enormous tracts without regard for the law or the rights of others. The recent wise activity of the courts in dealing with this class of citizens is an earnest that the rights of the people are in future to be more systematically guarded, and that thousands of acres of land now held illegally will be restored to the public domain.

So long as the stock industry is of paramount interest, so long must the question of forage be next in significance. The stock industry of the west has passed through a few very clearly marked stages up to the point of its present development. In the initial stage the forage was all accepted as it was found. No attempts were made to improve it either in quality or quantity. The first object was simply to develop and control stock enough to consume it. The range was absolutely open and the stock roamed at will, seeking the best in water and feed, unmolested save for the annual or semi-annual roundup. It did not take so long to reach the limit of stock supporting capacity of the range as had been expected. Overstocking resulted in some disastrous years and that led to inquiries after methods for increasing the forage supply.

Here begins the second well-marked step in the development of the industry. In Montana it dates from 1886. Naturally, the first thought that suggested itself was the control and irrigation of certain favorably situated lands. These were not considered in the nature of meadows, but rather as winter pasture. At first there was no thought of carrying the stock through the winter on feed, but merely of securing a limited supply for the emergency of a great storm or for an occasional feed for old cows or the less vigorous calves. Step by step, however, the idea of the importance of an adequate supply of forage grew upon those most concerned. One by one the stockmen became also ranchmen, who devoted themselves more and more to the production of winter feed. This, the fourth distinctive period in the business, saw most of the lands upon which water could be readily placed, all enclosed and occupied. Under those conditions the handling of stock demanded new methods. The public range was denuded on the approach of autumn and the stock must be gathered and cared for upon privately controlled pastures. On the exhaustion of these, hay must be relied upon for the remainder of winter and the early spring. These were the conditions which led up to the period of development now being entered upon. The great ranch is in many instances giving way to the farm, devoted to first-class forage crops and well bred cattle.

With the decrease in the size of the land holdings and the heavy investments in thoroughbred and graded stock, it becomes of greater and greater importance that each acre shall yield that which is of greatest worth. The smaller farms and consequent increase in the number of owners will not tend to diminish the total number of head of stock, but, on the contrary, it should and will greatly increase the business as a whole.

To substantiate this statement let us compare the cattle industry of

Iowa with that of Montana. With an area of 56,025 square miles Iowa has 1,429,340 milch cows and 3,432,832 other cattle, a total of 4,862,172. Montana, with an area of 146,083 square miles and a great reputation as a cattle state, has 37,161 cows and 786,560 other cattle, or a total of 823,721.

In other words, if the cattle industry of Montana was developed to the same extent as that of Iowa this State would have 8,911,063 cattle, or more than ten times as many as there are at present. Nor would this enormous increase in the material wealth of the State be confined to the value of the animals alone, for the change in methods necessary to produce and care for such a number of cattle, or even half of them, would most naturally adapt itself to the establishment of great herds of dairy cows and the erection of creameries all over the State, with returns to the farmer stupendously greater than those under present conditions.

While Montana leads all the states in the Union in the number of sheep and the production of wool, the statement that a change of methods would increase rather than diminish the number of sheep is just as true. If this industry was developed here as it is in Ohio, Montana would have 10,664,059 sheep in place of the present 4,304,333, or nearly two and one-half times as many.

To further illustrate what is actually being done under the new system a single instance is given. Within one mile of the town of Malta, a 45 horsepower gasoline engine furnished water for seven acres of alfalfa, which yielded four crops in 1905, the first one being cut in June. Six workhorses then began to feed upon the hay and continued to do so until the following April. In addition to the horses, 19 head of milch cows and young stock were fed beginning in October. So that by the time the hay was consumed, 25 head of stock was fed and kept fat on the product of these seven acres for fully ten months.

These figures are very instructive as portraying the future possibilities of the livestock industry in this State. There is absolutely no cause or reason to fear that this business will suffer and disappear with the absorption of the public range. Those engaged in the industry will simply adapt themselves in a gradual way to the necessities of the new conditions, and the business will develop and flourish in a way never before possible, to the great and lasting advantage of all concerned.

In its review of the range cattle market for the year, the Chicago Drovers' Journal says:

A year of unexpectedly high prices, good quality of offerings and favorable range conditions has prevailed in 1906. The prices particularly were a surprise to the owners as well as the slaughterers. From a rather unfavorable opening the market broadened into one of the best in a decade, and this even under receipts which were the third largest on record. The arrivals from the range for the year total 360,000, as against 389,000 in 1905 and 430,500 in 1895, the banner year for range cattle marketing.

In the early months of the season things looked bad for the range men. The great meat inspection agitation, which stirred both America and Europe, caused grave apprehension among the owners and traders, but, thanks to the

sound sense of the public, when the new meat inspection law went into effect the confidence of the consumers was restored and range offerings met demand as healthy and broad as has been noted for any season in the past ten years.

Fears that the crippled canned meat trade would result disastrously to the rangemen, by reason of probably very poor outlet for their thin steers, were entirely unfounded in that there were practically no range canners marketed, thanks to nature's goodness in providing plenty of moisture and grass on the range and the consequent improved quality of the animals.

The average arrivals were the best marketed in many years, and because of the high prices prevailing, together with the heavier weights, the cattle netted owners close to $10 per head more than in 1905. Hundreds of thousands of dollars' increase over the previous years thus went to the rangemen and a heap of prosperity has been their lot.

The average price of $4.40 for the year stood the best since 1902 and 60 cents higher than in 1905, while showing 75 cents gain over the average in 1904 and 1903, but still 45 cents less than average price of $4.95, which was the high year in the range cattle trade. The shipping season has been one of the longest on record. Favorable weather has afforded the rangemen opportunity to ship their holdings until right up to the end of the year, and this open early winter was thus a great blessing to the owners in reducing to the minimum the damaging effects of the annual menace—car shortage.

The inadequate facilities of the western railroads has been a serious handicap to the rangemens' interests. Lack of motive power and equipment sufficient to haul the great volume of cattle from the range has, however, damaged the stockmen thousands of dollars. The great chief reason for the roads' inability to handle the range cattle shipments properly seems to have been due to the unprecedented business prosperity of the northwest, which has so greatly increased the traffic of the roads beyond the dreams of the management of the northwestern lines that they have neglected to keep abreast with the fast growth and provide sufficient rolling stock to handle the live as well as the dead freight.

The movement of feeding cattle from the ranges during the year was about the smallest on record. Good condition of the offerings here made them very attractive to the packers and there was thus a slim proportion which fell into the feeders' hands. A very small percentage of the supply was of such quality that they were not good for beef and the consequence was that distillery feeders who annually depend upon the range marketings for their stock of winter feeding cattle had to be content to go without the usual big quota of such kinds.

Corn-belt feeders have turned to the native bred steers, while the distillery men were in most cases forced to make a much smaller volume of purchases in the market here, although they laid in a fair supply by purchasing in Nebraska and Colorado.

The first grass westerners marketed landed here in July and the good quality surprised the traders, but a greater surprise was in store and materialized in later months, when the quality showed further improvement. Slaughterers were quick to realize the superiority of the rangers as compared with late years, and from the start were good buyers. In fact, it has been easier to sell range steers this year than any year in the history of the trade, with the possible exception of 1902, when the record prices were paid.

Marketing did not get well under way until August and the prices were then considerably higher than in the first weeks of the season, though a drop was noted in September, but this period of lower prices did not last long

BRANDING THE CALVES.

and was followed by a keen demand and greatly higher values. An advance of 25@50c was noted in October as compared with September and the average price of the offerings that month, at $4 45, stood 15c above the September average, while in the last weeks of the season the prices have been on a very satisfactory level and showed a big gain over sales in the first month of the season.

The general average price of $4.40 for December stood 10c above the long month of September, but there was a larger percentage of common steers in the December arrivals, though they were also much smaller in number.

Nominally the market has closed the season 40@50c higher than it opened, and the most appreciable fact has been that this advance was scored during a period when the receipts were the heaviest, and the whole range cattle fraternity was thus benefited by the era of prosperity.

Top range steers for the year went at $6.35 in the second week of November, while in the last week of October the tops sold at $6.25, a gain of 50c over prices paid for steers of the same grade in the early weeks of the season. The top of $6.35 this year stood against $5.13 last year, $5.65 in 1904, $5.05 in 1903 and $7.40 in the banner year of 1902, this year's top price being the second highest since 1882.

Health of the rangers has been most satisfactory all season. Scabby cattle have been a rarity at Chicago and in the whole western territory there has been very little complaint among the owners relative to the condition of stock. Mange has been practically eradicated on the western range, thanks to the efficient work of the Bureau of Animal Industry inspectors and the diligent efforts of the rangemen themselves.

The proportion of range cow stock received this year has been comparatively small, though hardly more so than in 1905. The unpopularity of Texas cow stock on the northern ranges has been mainly responsible for the small supply arriving, while most of the home grown cows have been held back for breeding purposes. Pure-bred bulls have been sent into the range country in great numbers again this year and a better standard of quality is thus assured for the future.

Cow prices have been very satisfactory all season, and the fact that there were few range canning cows among the arrivals has been very gratifying both to the owners and local traders. The canners are usually very mean sellers, but this year was an exception, prices for the low grade range cows being relatively much higher than for native canners.

Range heifers made a top of $4.60 for the year, against $4.25 the previous year and $3.90 in 1904, while there was a liberal supply of cows landing up to $4.35 and a goodly number up to $4.50. Not many of the cows sold below $2.75, while the inferor range canners went down to $1.60.

A liberal supply of hay-fed western range cattle was marketed during the year, though not as many came in 1905, when the receipts of this class were the largest yet to come from the ranges. The mildness of the past winter gave rangemen assurance of a good grass season, and they were thus encouraged not to feed hay as liberally as the previous year.

Hay feeding is a firmly established institution in the range country, however, and reports in late weeks have been to the effect that the big number of cattle are being fed this winter to be marketed in the next few months. Montana and Dakota rangemen are taking the lead in this direction and the good prices their hay-fed offerings have brought in this direction have been a great stimulus to increased activities.

The Yellowstone, Milk River and Gallatin Valleys in Montana are big hay-feeding sections, while the Big Hole Valley is another, and in the Big Basin country of Wyoming many more are being fed.

Marketing this year started very early in the season, the first arrivals coming January 12, a few loads of Colorado hay-fed steers then selling at $4.60. Montana and Dakota cattle soon followed and later that month sales were at $4.15@4.55, while cows and heifers brought $4@4.40. A liberal supply of steers came in February, and sales were at $4.30@4.80, with the cheaper lots going to corn-belt feeders, while cows then brought $3.65.

In March hay-fed steers sold up to $4.85 and feeders at $3.90@4.40, while cows brought $3.85. April sales were at $4.35@5.00, while in May a considerable supply of fat Montanas brought $5.20@5.50, the latter price being top for the year.

Hay-Fed Range Steers.

Months.	Range of prices.	Bulk of sales.
January	$4.15@4.65	$4.15@4.60
February	4.30@4.80	4.70@4.80
March	3.90@4.85	4.40@4.85
April	4.35@5.00	4.55@4.70
May	4.30@5.50	4.60@5.20

Hay-Fed Cows and Heifers.

Months.	Range of prices.	Bulk of sales.
January	$4.00@4.40	.....
February	....@3.65	.....
March	....@3.85	.....
April	3.40@4.35	.....

THE SHIPPING LAW.

Agitation of the subject by national and state stockgrowers' associations led to an amendment of the law regulating the shipment of cattle, which was designed to prevent cruelty to animals while in transit. The law, as amended, provides that livestock shall not be confined in shipment more than 28 consecutive hours without unloading in a humane manner into properly equipped pens for rest, water and feeding, for a period of at least five consecutive hours unless prevented by storms or other accidental or unavoidable causes.

It is provided, further, that upon written request of owners, or person in custody of the shipment, the time of confinement may be extended to 36 hours. This request, however, must be separate and apart from any printed bill of lading or other railroad form. The manner of estimating the time of confinement is the same under the new law as it was under the old. The time during which the animals have been confined without rest, food or water on connecting roads is included.

The new law does not require that when the 28-hour period expires in the night time sheep shall be unloaded, but they may be carried on in continuous transit until daylight, to a suitable place for unloading, subject to the 36-hour limitation.

Under this law Montana shippers to St. Paul seldom have to unload more than once, whereas under the old law they were compelled to unload at least twice. Storms and accidents which cause delay and consequently more frequent unloading are still of common occurrence, but under normal conditions the stockmen save at least one unloading on each shipment and consequently

are highly pleased with the new law. It is now proposed that Congress shall pass a speed law, compelling the railroads to maintain, under certain conditions, a speed of 16 to 20 miles an hour with stock trains. These two laws will it is claimed, enable the shipper to put his stock on the mraket at a minimum of loss and expense, as well as in a thoroughly humane manner.

HAY-FED CATTLE.

The method of preparing and marketing Montana cattle is also undergoing a marked change and one that will have a far-reaching effect. Formerly it was deemed absolutely necessary that range cattle should be sent into the corn-belt to be finished, and the feeding of this stock was a great industry. Now it has been demonstrated that steers fattened on Montana native grasses alone, without ever having tasted grain, will outweigh and outsell those that have been on corn for three months or so. While the production of hay-fed cattle in Montana is as yet confined principally to the Big Hole Basin in Beaverhead County, there is no reason to doubt that the native grasses of other sections may be found to contain the same nutritive qualities, or that the business may be largely extended. The Big Hole ranchers did not take kindly to alfalfa or other forage crops, always maintaining that the native grasses properly cured possessed higher feeding value than any other known crop. The success which has attended the product of the feeding lots in Beaverhead have proven that this contention was right. At the beginning shipments of hay-fed beef were all made to the Pacific coast, but the development of the industry made it necessary to seek another outlet, and the Chicago market was invaded.

The arrival of 12,000 hay-fed steers during the month of May, 1905, all in superb form, caused great enthusiasm among the buyers. Their weight averaged close around 1,350 pounds and they invariably outsold cattle that had been on corn five or six months. All through their season they outdressed most of the corn-fed cattle by two or three per cent, a fact that, coupled with immunity from shrinkage, assured deserved popularity for them. None of the Big Hole Basin cattle dressed less than 59 1-2 per cent, while the bulk of them were credited with 60 to 62 per cent on the dressing sheets. At the same time corn-fed steers were dressing from 59 to 60 per cent. The success attending the first sales in the Chicago market led to increased feeding operations in the winter of 1905-6, and not less than 20,000 head of cattle were fattened there. It was estimated that more than 50,000 tons of hay were carried over from the previous season, and this, together with the bountiful crop of 1905, was fed, netting to the feeder $7.00 to $8 00 a ton. Owing to its bulk and distance from shipping points, this hay would have no commercial value if not used in this manner, many of the feeding pens being 50 miles or more from any shipping station. As a rule, the feeding is done in small bands, numbering from 100 to 800 head, and feeding begins about Thanksgiving day, and flesh is put on the animals early so that they will be better able to stand the cold and severe storms of the later season. The average gain is about 250 pounds per head. Mr. E. Andrus tells how the feeding operations are conducted in the following interesting letter:

"I will try to give some information as to feeding beef on hay here in the Big Hole Basin. In the past eight years I have been feeding and fattening cattle on wild or native hay which by irrigation produces from one to two and one-half tons of hay per acre. Irrigating is an easy matter here, as all we do is to turn water into ditches and then spread it over the ground as much as possible and just enough to keep it wet from about June to July 1 or 10, when it is turned off. As soon as the meadow is dry enough to let the hay cure, haying begins, the hay being about three-fourths grown or just heading nicely and being short and very fine-stemmed. This is the very best beef hay, and that put up in the first two weeks of haying will make any horse or cow gain rapidly if given all it can eat of it. In fact, I never use oats to feed my work horses.

"I believe I have fed almost every class of cattle. I have fed the little Southern Utahs and Nevada 'knotheads' that never get old enough to weigh more than 900 to 1,100 pounds when fat, and from these to the well-bred Shorthorns and Herefords. I have always managed to put tallow on them, but I find that the little, narrow, contracted, slab-sided, ewe-necked ones fatten very slowly and of course do not pay to handle, as you have nothing to begin with and almost less when you are done with them, if you count feed and labor worth anything.

"It requires 35 to 40 pounds of hay per day for two and three-year-old steers, that being the age of mosts steers fed here. A few years ago quite a lot of veal was fed, but there was not much market for it and the feeders are not feeding much of this stuff now. The average feeding season is from four to six months on hay, and for a six months' feed it does not make much difference how thin the animal is, as he will get in good shape for the butcher.

"There are some difficulties to be met with in fattening. One is that cattle get off feed or 'stuck,' as it is called here. This is caused by bad water, too much of a certain kind of coarse hay and dirty mangers which cause indigestion, constipation or scours, causing them to stop gaining or lose flesh.

"Tame hay is not much used here, as stock do not seem to do as well on it as on the wild hay. Steers are put into corrals and fed in mangers built of logs. Into these mangers the hay is put twice a day. These mangers are cleaned two or three times a week, and from one to three loads of cleanings are hauled out from 100 steers per week and fed to stock cattle, thus using all the hay."

LIVESTOCK ASSOCIATIONS.

The following somewhat unusual resolutions were adopted at the meeting of the North Montana Roundup Association, held in Helena, April 19, 1906:

"It cannot be denied that the present is a time of great depression in the cattle business. The situation derives emphasis from the well known fact that the related industries of sheep raising and horse raising never were more prosperous and the same happy state of affairs prevails throughout the United States in agriculture, trade railways, manufacturing, the arts and in real estate.

"The unsatisfactory condition relating to cattle in Montana has been aggravated by local causes, chief among which has been the three consecutive years of drouth; but the blight upon the industry is more keen and widespread than is caused by any manifestation of nature; it is uniform in its character and is universal in its effects.

"Not since the season of 1902 have the cattle growers received enough for their beeves in the market to encourage them to remain in the business, and there have been too many impediments thrown in the way of getting their product to the market in good shape.

"If prices do not grow materially better, commencing the present year, some of the owners will have to confess to bankruptcy, and others will engage in sheep raising, with the consequent result that the cattle business in Montana will, to a considerable extent, die out.

"It is not probable that the blight upon the industry will be removed by the force of public opinion, expressed in indignant utterances of the producers and the consumers, nor has the power of the United States government, in a tentative way, proved equal to the case.

"In the grave danger that besets the national government as a result of the increasing discontent of the masses, that has been caused by contemplating the rapid concentration of the wealth of the country in the hands of a comparatively few people, combined with the arrogance and the oppressive business acts of a class of disreputable citizens styled captains of industry, who mostly ought to be wearing stripes and doing time in penal institutions, it has been most encouraging to find the President standing on the side of the people. He has done so to the best of his ability, but in the senate his best measures have been treated with a kind of contempt by some senators of his own political party, men of no reputation for political honesty, but who are narrow, sordid and vicious, chief among whom are Aldrich, Foraker and Elkins.

"Furthermore, in the exercise of his powers, the president is handicapped by these formidable nothings styled official courtesy and deference to vested capital, as exemplified in the colossal freebooters of the nation's blackest slum, called Wall street. However, it is an unnecessary concession to that class that the President should stigmatize the able men who throw light on such practices by their articles in magazines by styling them 'the man with the muck rake.' Unstinted praise is due the able daring and intrepid spirits who have the ability to investigate legalized crime and the courage to throw light upon it.

"It adds to the glory of womanhood that one of the sex, Miss Tarbell, first fully exposed to public detestation the inventor of the iniquitous system whose harmful practices and the example set by the immense wealth amassed has been imitated by many persons of kindred capacity for evil, the net result being to fever the brain of the public, inflaming some with a desire to get rich quick without regard to methods and others to unionize every branch of labor so that, between the two kinds of human sharks, the humble producer of the necessities of life is ground into the dust. A revolution by violence, in the effort to set a limit to greed, is to be deplored, but it is sure to come if a revolution by the ballot cannot be effected within the next four years.

"All the people except the professional politicians are tired of both the great parties, and will vote for any honest man now known to the public, be he Roosevelt or Tillman.

"The enforced retirement of such a notorious mischief breeder as Grosvenor of Ohio is indicative of the beginning of a new era.

"Says the president, aiming at the criminal rich, 'Go on, keep to your

present policy of contempt and defiance for the popular conception of justice and righteousness and the day of destruction cannot be far away.'"

The officers of this association are: President, Henry Sieben, Helena; vice president, John Survant, Malta; secretary-treasurer, W. D. Coburn, Brookside; chairman executive committee, M. E. Milner, Malta.

The dissatisfaction expressed by shippers over the West with present charges for marketing cattle, culminated in the formation of a Co-operative Livestock Commission, authorized and promoted by the American Stockgrowers' Association. The Co-operative company has a capital of $100,000, with its membership confined to growers exclusively, and no one can purchase more than $500 worth of stock. It is organized to protect the growers from what are believed to be extortionate charges by the commission men, who recently made an advance in the commission rate from $10 to $12 a car. Figuring on the number of cars handled at the eight big markets last year, that increase means a raise of $1,500,000, which the stock interests must stand. This comes on top of the statement made officially by the National Livestock Exchange that, by doing away with solicitors and free market advice to shippers, they have cut their expenses $30,000,000 a year.

The company proposes to employ competent salesmen and have them handle the stock at the big markets. The charges for sheep and hogs in single deck cars will be $6, and for doubledeck cars $10 a car. Cattle charges will be 50 cents a head, with a maximum of $10 a car. Stockholders will receive a dividend of eight per cent and the balance of the profits will be divided among the patrons of the company. The board of directors is composed of some of the best known stockmen of the country, representing growers of hogs, sheep and cattle. The members are:

Muro McKenzie, Trinidad, Colo.; J. H. Halley, Delta, Colo.; F. W. Gooding, Shoshone, Idaho; L. Ames, Buckingham, Iowa; T. A. Thornburg, Linden, Iowa; J. L. Heath, Peabody, Kas.; Joseph T. Brown, Birney, Mont.; C. M. O'Donnel, Bell Ranch, N. Mex.; Richard Walsh, Paloduro, Texas; M. W. Parsons, Salt Lake City, Utah; Thos. A. Cosgriff, Cheyenne, Wyo.; J. M. Wilson, Douglass, Wyo.

SHEEP AND WOOL.

Remarkably prosperous conditions continue to prevail among the sheepmen of the State, for while the wool crop of 1906 did not bring the prices that were expected they were still high enough to leave a large margin of profit, while lambs and mutton have sold at figures that are satisfactory to all growers. Owing to range conditions and the enormous demand for fat stock and feeders, the total number of sheep in the State shows a marked falilng off, with a consequent reduction in the yearly wool clip. As these conditions are common to all the western wool growing states this selling movement has not affected Montana's position as the largest producer of wool of all the states in the Union. Like the cattle industry, that of sheep raising is undergoing a tremendous change, and one of its chief effects may be noticed in the report made to this office by the Inspector in charge of the local office of the Bureau of Animal Industry, at Fargo, N. D., Dr. R. H. Tracy. According to this report the number of sheep shipped out of Montana in 1905 was 1,415,479, and during the first six months of 1906, 121,852 were shipped. This movement still continues, though at the present writing, October 21, the failure of the railroads to furnish cars has practically put a stop to shipments and vitiated many sales already made. However, these figures show that for 18 months prior to July 1, 1906, not less than 1,537,331 sheep were sold from Montana flocks to leave the State.

This decrease is in apparent conformity with a world-wide movement which seems to occur periodically without any known or accountable reason. The highest authorities declare that there has been an astounding decrease in the number of sheep in the world since 1895, and even since 1900. Canada is constantly decreasing its flocks. Germany has fallen from 28,000,000 sheep in 1860 to less than 10,000,000 in 1900. India has decreased its flocks from 20,654,660 in 1892 to 17,751,096 in 1903. Spain, the motherland of fine wool production, has fallen from 16,469,303 in 1895 to 13,359,473 in 1903, and the ten year drouth in Australia almost entirely destroyed the industry in that country. During all these years population and wool consumption has been increasing, and yet the world's present stock of sheep is 455,000 000, as against 526,000,000 in 1895.

A feature of this exodus from Montana lies in the fact that many sheep have been sent during the past two years to northern Wisconsin, there to be fattened for market. This is an entirely new feeding district for Montana sheep and the success so far attending the venture means that it will doubtless grow to large proportions.

NOTE—As this page goes to press it is ascertained that the total amount of wool sheared in Montana during the season of 1906 was 41,008,538 pounds, an increase over 1905 of 803,168 pounds.

At no time during the present season has the supply of fat mutton been equal to the demand, and this notwithstanding the fact that receipts at Chicago have been enormous. Concerning these conditions the Drovers' Journal says:

"Surprise has been expressed by a good many buyers who have searched the Chicago market for feeding sheep at the remarkably small showing of wethers in the supplies. Orders for good feeding wethers have been in hand here for weeks with a price limit of $5 per cwt. that it has been impossible to fill with anything good enough to suit the feeder.

"One does not have to think hard or inquire far to find a good reason for this condition. During the last half dozen years, more especially than in any other period of sheep raising, has the practice of selling the whole lamb crop each year been popular with farmers.

"Western ranchmen, too, in that time have shipped the great bulk of each year's crop to market as lambs. If not fat, there has been a good outlet for them in recent years to feeders in central states. Time was not many years ago when yearlings and wethers formed a considerable portion of arrivals of native sheep, but a bunch of a dozen wethers these days on this market is uncommon enough to call for special attention from traders. An order for a double deck car of wethers could not be filled here in a month. Not one load of good fat western wethers has been available here this season, where a dozen could have been supplied from the range five years ago. The popularity of lamb meat has sounded the knell of the mutton wether.

"Fewer sheep have been taken out this season to fatten than ever before, chiefly because the feeding grades were not to be had. Such feeding wethers as were offered of a good class have found ready sale at $5.00 and $5.25, very few strictly desirable feeders having been offered as low as $5.00. With feeding lambs selling up to $6.50 and $7.00 most of the season, there was a demand for all the good wethers to be had even at these prices, ranging from 50 to 75 cents higher than what were considered high prices the year before. So small a supply of feeding yearlings and wethers has been taken out that a scarcity of fat mutton stock more alarming than ever before is threatened for the coming winter and spring markets."

Madison is perhaps the only county in the State to show a material gain in sheep during the past two years, and this is undoubtedly due to the unfavorable conditions attending the cattle business, which have caused many to go out of that industry and to take up sheep instead.

The clip of 1905 was estimated to be 40,205,370 pounds, an increase of 2,430,246 pounds over the previous year, and the average price of all wool sold in Montana was nearly five cents more in 1905 than in 1904. Figuring the average price at 21 cents a pound, the clip of 1905 brought to the State the sum of $8,443,327.70. The average weight of the fleeces was 6.8 pounds in 1905, as against 6.3 pounds in 1904, and the number of sheep shorn was decreased 25,000.

The wool market was decidedly active during the season and the "four pounds for a dollar" was a favorite war cry of growers. At Miles City the Hunter & Anderson clip, about 100,000 pounds, was sold to Silberman Bros., of Chicago, at 26 cents. This is said to be the highest price paid for wool in this State for twenty-five years.

The clip of Fergus county, which amounted to 4,450,000 pounds, sold at

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A HERD CROSSING POWDER RIVER AT OLD N — RANCH.

an average of 22 1-2 cents, a record which was not reached by any other county. This amount of wool was taken from 633,904 sheep, an average of a trifle over 7 pounds to the fleece, which may be taken as a fair average for the State.

In 1905 Billings took first place as a wool market from Great Falls, which had held the proud position for many years, and maintained its supremacy in 1906, handling about one-fourth of the entire clip of the State, nearly 11,000,000 pounds. The highest price paid at this market, and so far as is known the highest in the State, was for the Schroeder, Lake Basin, clip at 24 3-4 cents.

Predictions made early in the season that the market would show a price of 25 cents a pound or better were not realized. Prices at Billings averaged about 20 cents. At Great Falls in the neighborhood of 4,500,000 pounds were marketed, and prices ranged from two to two and one-half cents below the Billings market. The decadence of the Great Falls market is directly traceable to the opening of the Lewistown market, made possible by the building of the Montana Railroad, and the special sales at Fort Benton, and those at Harlem, Chinook and other stations on the Great Northern.

Probably the bottom price for the season, 13 1-8 cents, was paid at Great Falls July 27, but one clip sold the same day reached 24 1 8 cents, while at Fort Benton the range of prices was over 9 cents. Some of the wool was said to be damaged by dipping for scab, but this was a claim made by buyers only.

Early in the season there were rumors of a buyers' combine to bear prices, and the expectations of the growers that the market would be strong at 25 cents were not realized. Strong denials of the existence of any agreement or combine were made, but the facts speak for themselves. One of the largest wool growers says:

"This season's wool market has been especially notable for the close organization which the eastern buyers were able to perfect. Last year there was a bad break in their system, which was in every way most favorable to the sellers.

"Early last season a local firm of buyers, which had previously been buying for eastern firms, began buying on their own account, and before the eastern men were fully aware of the situation this new firm had purchased about 2,000,000 pounds of the Wyoming product and nearly 2,500,000 of the Montana clip. This startling information brought the representatives of the old houses in to the field in a mad scramble for the balance of the clip, and prices soared way above the fondest expectations of the most sanguine sellers.

"The enterprising firm that had inaugurated the campaign disposed of its holding to good advantage and cleared from $50,000 to $75,000 on the venture. Encouraged by this success the same firm started in early again this year and made extensive purchases of Wyoming wool, and began picking up Montana clips. But the eastern buyers were aware of the situation this time and at once perfected an organization for the control of the Montana market.

"When the western buyers were ready to dispose of their Montana purchases they found that there was no market for their holdings except on such terms as were offered by the old established houses.

"Instead of opening up the market, as had been the former custom, not only were the growers shut off from the bids of last years free lance, but the firm itself seemed to be tied up with the wool already purchased. Under these conditions their purchases in open market suddenly ceased, and the wool situation was again in the hands of the combine. So strong was this reorganized combination that some of its members actually told growers like C. M. Bair that they would have to come into open auction sales with their clips if they wanted to dispose of them. It is needless to say that the small grower was helpless under these circumstances, and was forced to take what he was offered by the buyers.

"If any seller refused to market his clip at the figures offered, it was the practice of the buyers not to make a good figure again, thus forcing him to sell at a loss or to consign his clip to the tender mercies of eastern commission firms. Some of the larger growers were able to withstand the combination, and their clips were consigned under a satisfactory guarantee as to minimum price.

"At the opening of the season there was a general opinion that 25 cents would be the average price for wool, but a considerable part of the clip was purchased at figures ranging below 20 cents.

"The promptness and assurance with which the buyers' pool regained almost complete control of the Billings market is sufficient evidence of the need of some kind of a protective organization among the growers whereby they may withstand this combined assault on prices that has worked so successfully against their interests this year."

Additional evidence, if such be needed to prove the existence of a combine, may be found in the fact that Boston market prices were at this time ranging higher than the clean landed cost of wool there, showing a handsome profit over Montana market prices It should be remembered that wool sold in the dirt and grease at from 16 to 24 cents is worth in Boston when scoured from 60 to 75 cents. Indeed, if the estimated cleaned cost of Montana wools was correct, the 1906 clip is acknowledged to be the cheapest territory wool bought this season.

For many years there were maintained strong and active associations among sheepmen for the express purpose of protecting their interests in matters of this kind, but all had been suffered to lapse. The market was good, prices were advancing, everybody in the business was making money and the necessity of organization was apparently lost sight of. Suddenly the flockmasters are aroused by the fact that through inattention and oversight they fail to realize their well founded expectations and they suffer a loss of three or four cents a pound on a 40,000,000 pound wool clip, nearly a million and a quarter dollars.

The immediate result was the formation of an association, at a convention called for that purpose by proclamation of Governor Joseph K. Toole. The proclamation follows:

"Whereas, The National Woolgrowers' Associaton, after careful investigation and consideration of conditions existing in the wool market in Montana and elsewhere, is firmly of the opinion that the flockmasters of the state of Montana could have received from one to three cents more per pound for their wool for the present year if they had been organized into a strong state association, citing the fact that Wyoming flockmasters, with such an organization,

received prices in most cases equal to those paid for Montana wool, a condition which never existed before; and

"Whereas, Representative woolgrowers have, by petition, represented to me the foregoing facts, supplemental to and in aid of the suggestion of the National Woolgrowers' Association, and further, have requested me to call a general meeting of the woolgrowers of the State of Montana, to be held in the city of Helena on the 3d day of October, 1906, and to continue in session for the period of four days, for the purpose of considering the advisability of organizing the woolgrowers of the State into an association; now therefore, in consideration of such request of said association, and upon the petition aforesaid,

"I, J. K. Toole, Governor of the State of Montana, do hereby call a mass meeting, or convention, of the woolgrowers and flockmasters of this State, to be held at Unitarian hall, Helena, for the purposes aforesaid, on October 3, 4, 5 and 6, 1906."

Fully one hundred growers were in attendance at the opening of the convention, J. E. Bower acting as temporary chairman and Lewis Penwell as temporary secretary. A committee was appointed to draft a plan of organization for a woolgrowers' association, and also one to propose a plan for a co-operative selling company. Upon the recommendations of the first committee the Montana Woolgrowers' Association was formed, its objects being the advancement of the wool growing and sheep raising industries; to bring about the equitable and proper use of the public range; and to endeavor to secure fair transportation rates for wool and sheep.

An executive committee of thirteen, no two to be from the same county, is provided for, to be elected from the membership and to hold office for one year, and a president and secretary-treasurer, who are ex-officio members of the board.

All citizens of Montana engaged in sheep growing, and stockholders in any company engaged in sheep growing, are eligible to membership. The dues are $5 a year, payable in advance, and the board is authorized to levy an assessment if necessary. Annual meetings are to be held in Helena during State Fair week. The officers of the association are: President, J. E. Bower, Oka; vice president, A. K. Prescott, Helena; secretary-treasurer, H. J. Giltinan, White Sulphur Springs. Executive board—Henry Sieben, Lewis and Clark Charles McDonnell, Sweetgrass; A. C. Logan, Yellowstone; W. D. Jones, Teton; C. H. Williams, Powell; P. I. Moule, Meagher; Fred Cole, Custer; William Lindsay, Dawson; B. C. White, Fergus; J. B. Long, Cascade; Ernest Selway, Beaverhead; L. H. Mills, Valley.

This committee was instructed to select a vice president from each county in the State, whose particular duty it will be to secure new members for the assocation.

The report of the committee on the formation of a co-operative wool selling company was as follows:

"We recommend that a co-operative company be organized to be known as the Montana Woolgrowers' Commission Company, having a capitalization

of $500,000, said amount to be raised by each wool grower of the State subscribing for said stock at the rate of 10 cents per head of sheep which he owns.

"The committe also recommends that not less than 10 per cent of said amount be paid with said subscription, the balance to be called for by said company in installments of 10 per cent each as needed by said company. The purpose of said company is to establish a wool selling agency or agencies to handle Montana wools, but no subscriber to be obligated to sell wool through the company."

This report was adopted and subscriptions representing a total of 225,000 sheep were signed at once, and many more were secured later. Articles of incorporation of this company were filed on October 18, 1906, in which the objects were stated to be:

"To establish an agency or agencies for the handling and selling of wool belonging to the stockholders of the corporation; to rent and provide for wool warehouses; to receive from stockholders wool on consignment; to borrow and loan money in the conduct of said business, and generally transact such business as is usual or appropriate in the conduct of the affairs of a wool growers' commission company."

The articles of incorporation provide that the ownership of stock in the corporation shall be limited to wool growers, and the transfer of stock to any other person shall entitle the directors to cancel and retire the same upon payment to the owner of the amount paid to the company by the original purchaser, together with the dividends to which the same may be entitled at the date of the cancellation. Such stock may be reissued by the company. The incorporators are John T. Murphy, T. C. Power, and Lewis Penwell, all of Helena, and the directors are: W. G. Conrad, Great Falls; B. F. White, Dillon; B. D. Philips, Helena; S. S. Hobson, Lewistown; J. E. Bower, Helena; William Lindsay, Glendive; A. K. Prescott, Helena; John T. Murphy, Helena; N. B. Holter, Helena; T. C. Power, Helena; John M. Holt, Miles City; Henry Sieben, Helena; Lewis Penwell, Helena.

The capital stock is $500,000, divided into shares of $100 each. Helena is the principal place of business, and the term of incorporation is 20 years.

The following letter from the secretary of the National Woolgrowers' Association was read and received the hearty approval of the convention:

"This is unquestionably a most opportune time to effect an organization, for if there is a sheep and wool growing state in the union that is in need of a strong organization, officered by men of ability, it is Montana. We need not refer to the many reasons why you should be organized, for you sheepmen are well acquainted with local conditions, and I believe you are all in thorough accord in the belief you should have a state association to guard your interests at home, and, affiliated with the National Woolgrowers' Association of the United States, receive just recognition and a careful hearing of your grievances abroad.

"Montana has more sheep and produces more and better wool than any other state or territory in the union, and you should be first in the matter of organization, and I believe the day is not far distant when you will take the lead in this respect just as you have taken and now maintain the lead in your production of wool and mutton.

"This is the day of organization—even the bootblacks are organized—and without organization you cannot hope to receive the same benefits individually that can be attained through a combination of your interests. The wool buyers are organized, and if you ever doubted this your doubts were dispelled this summer when you were forced to accept less than the market price for your wool. The livestock commission men are organized, and they did not hesitate on Jan. 1 last to raise the commissions $2 per carload for all classes of livestock. The packers who buy your mutton, are organized. The railroads understand each other thoroughly and agree upon excessive freight rates which you are compelled to pay, and which, at times, deprives you of your rightful profits. The woolen manufacturers, who transform your wool into the finished product, are organized. Indeed, they have an organization which was formed the same year as the National Woolgrowers' Association sprang into existence, and which is stronged today than ever before, and right now menaces the wool growing business of the country, for they are clamoring for free wool. Even the men who shear your sheep have their organization, and they tell you what you shall pay for removing the fleece from the backs of your sheep.

"Why then should the grower not be organized? There is no reason under the sun why you should not, and the only reason that you are not organized is because of a lack of interest, or rather a lack of attention to duty, a duty that every sheep grower should perform for the general good of the entire industry.

"In addition to the combinations of the wool buyers, who every year attempt to 'squeeze' your clip, and who frequently get away with the goods, as was done in Montana last summer, you are threatened by the eastern theorist, who, under the guise of conserving the water supply, has hoodwinked our government at Washington into the belief that the forests must be protected, and that, if sheep are allowed to graze in the reserves at all, it must be under ironclad rules and restrictions that are in most cases detrimental to the best interests of the sheep business. Reserves have been created everywhere with a reckless abandon that proves conclusively that the interests of the stockmen were not considered, even though they had used the sparsely timbered tracts, now called forest reserves, a portion of each summer, but you are compelled to pay all the grass is worth and more too, and the conditions governing grazing in the territory are not satisfactory to you. The forest officials will tell you that the stockmen are satisfied, but I know this is not the case on many of the reserves, for I have petitions on file in the office at Cheyenne, and signed by hundreds of sheepmen, stating that the charge of from five to seven cents for sheep is greatly out of proportion when compared with what is charged for other classes of livestock.

"Then, too, it is charged that in the administration of the reserves partiality is shown certain interests as against the sheep interests.

"The sheepmen have been compelled to submit through lack of organizaton in presenting their claims for privileges, and also in making complaint against the prejudiced acts of the men in charge of the reserves, but the time is not far distant when the objections of the sheep interests will be heeded. One trouble was we were the tail to the other fellow's kite. He has been telling the government that we, meaning all stockmen, are satisfied, and as a result the few complaints that have been made by the sheepmen have not been regarded seriously.

"As a matter of fact the sheep interests have just cause to complain, not only of the forest regulations, but there is a serious doubt in the minds of some of the leading jurists of the west as to the legality of the forest reserve requirements. It is held that the govern-

ment has no right to come here and say that you can or cannot use the forest reserves, or that you can graze only a certain number of sheep or cattle on this or that reserve, or that you shall pay a certain fee for grazing. The very fact that one department returns a certain percentage of the receipts from grazing for use in conducting the public schools of the state is considered prima facie evidence of the illegality of the forest reserve regulations. If the state is entitled to anything, why is she not entitled to all? Why haven't the states the right to govern these reserves the same as other property within her borders? I believe she has, and when one test comes, I am satisfied the verdict will be in favor of the states and the stock interests.

"There is only one way to bring about the concessions desired by the sheep interests, if the forest reserve policy is to continue, and that is through organization. And there is only one way for us to test the legality of the policy, and that is to send fair-minded and able men to the congress of the United States to present our claims. Elect men whose friendship for the stock interests is beyond question. Tell them what you want, and then back them up with united effort and a strong organization.

"And the forest reserve matter is not the only one that needs the attention of organized effort upon the part of the sheep interests, for are we not threatened with a public land grazing tax? Pretty soon they will tell us there is no objection to levying a tax upon the public range, just as they are trying to make people believe that the forest reserve policy is welcomed with open arms by the stockmen. But we must be prepared to contradict such statements with good, sound arguments, backed up by strong state and national organizations. Now is the time to organize, and I sincerely hope you of Montana will grasp this opportunity to launch not only one of the strongest state associations in the union but the strongest.

"Effect your organization. Adopt a constitution and by-laws that will enable every grower and breeder to join, and which will entitle the man with 100 sheep the same rights and privileges as the man with 10,000 sheep. Elect your best men to the positions of president, vice president and secretary-treasurer, and call upon every sheep man in the State to become a member. Join the National Woolgrowers' Association, and, after you have threshed out your affairs among yourselves and decide upon what you want, come before the national, and rest assured everything possible will be done to secure the concessions you desire."

Not only does Montana stand first in the number of sheep and the amount of wool produced, but in the person of Mr. C. M. Bair, of Billings, she has the largest individual owner of sheep on the North American continent. His clip weighed nearly 1,500,000 pounds, and when baled filled 44 freight cars. These were sent east in one train with two engines, the wool having been consigned to Brown & Adams, of Boston. If this clip was sold at the reported price, it brought the owner the neat sum of $360,000 for one season. The second largest shipper in the State is the J. B. Long Company of Great Falls, whose 1906 clip amounted to 1,250,000 pounds, which is believed to have been sold at 25 cents. Nearly all of this wool was shorn in Valley County, though there was some shorn in Teton and Cascade counties.

The Bureau is indebted to the official organ of the National Association of Wool Manufacturers for the several pages of comment and tables in relaton to the sheep and wool industry in this and other countries:

THE NUMBER OF SHEEP.

We place the number of sheep fit for shearing at 38,540,798, compared with 38,621,476 the preceding year. Decreases are to be found in some of the grazing states, because of larger shipments than usual last autumn, while in some of the states of the Middle West the numbers have been increased because of the development of the industry, and because of more accurate information secured. Prices were again high for all kinds of sheep stock and the temptation to take advantage of them was partly responsible for the decreases shown in the table.

THERE WAS LESS CONTRACTING THAN IN 1905.

Contracting for the clip of 1906 was not so widespread and general as for that of the preceding year. Conditions compared with 1905 were quite reversed. During last autumn representatives of the buyers attempted to contract ahead, but their efforts met with little or no success, the experience of that year making growers wary of entering into binding obligations. This was especially true of Montana, where, as late as May, but little of the clip was sold, whereas at a corresponding time last year but little remained to be sold. The two parties necessary to conclude a bargain held back—the one from selling, because he expected higher prices for his wool, and the other from buying, because he felt conditions in the market did not justify the sums asked.

This lack of eagerness on the part of buyers to meet the views of holders caused a loud complaint to be registered that there was a "wool combine" and a "wool trust." But the reason for this failure to agree is obvious. Conditions in the two years were not similar. This year wool could be secured only at what seemed high prices, 33 1-3 per cent higher than the average for ten years past; whereas, when contracts were made for 1905 it was the reverse. Then the advance in the price for sheep and wool had scarcely more than begun, and the growers, not knowing what the season would bring forth, accepted figures which looked attractive so far in advance of shearing and which were much higher than those to which they had been accustomed for some years. The sums offered seemed exceptionally good, and they were, but not so good as were obtained by those who waited.

As the season of 1905 developed and prices hardened, the growers, when approached in December on the question of contracts, were unwilling to let their clip of 1906 go at the rates paid for that of 1905. Later on the buyers felt it was unsafe to advance their offers, believing that wool was as dear as it was likely to get, and they could better afford to await developments than enter into contracts which might result disastrously for them. The same willingness to be governed by market conditions, prevailing at clipping time, was manifested by the growers, who, eased in their financial conditions, with debts paid and comfortable balances in the bank, were not obliged to part with their wool, which they felt would be needed for manufacturing purposes at prices better than those offered. The hopes of the sheepmen had been aroused, and they felt justified in asking and expecting a substantial increase over the prices of the preceding year.

The statistical situation, with comparatively small supplies on hand available for the mills—though some hold they were as heavy as in January—with the increased production of Australasia swallowed up without effort and without depressing prices, and with machinery fairly well occupied, seemed to support their view. The world was thought to be near the sheep's back and no heavy stocks existed from which to draw. But the course adopted by the users of wool, the arbiters of the price, in the two seasons was radically different. In 1905 they bought early and eagerly, anticipating future needs; in 1906 they purchased cautiously in small quantities and only for immediate needs. In the former year, early seeing the likelihood of higher prices for wool, they speedily purchased contracts for the clip of 1905. Not only that, but they went into the markets of Great Britain and secured English, Australian, and River Plate wools at prices regarded by English manufacturers as reckless and extravagant. Their judgment was vindicated and the wisdom of anticipating future wants became evident as time elapsed, and with it the very considerable appreciation in the prices of wools of nearly all descriptions.

A DIFFERENT POLICY PURSUED IN 1906.

This very appreciation, however, caused them to pursue a different policy in respect of the clip of 1906. It was a question whether the limit had not been reached, whether a reaction was not due, and whether it would be wise to buy freely, as in the previous year, or supply only immediate needs and buy from hand to mouth, so to speak. This latter course was quite generally adopted, not from any agreement but from a general belief that prices would not go higher and might go lower. They feared no rise in values over those prevailing; they gave no orders for contracts; they allowed stocks on hand to decrease; they bought sparingly, if at all—in a word, they pursued a waiting policy. And if they had not, if they had adopted the tactics of the year previous, undoubtedly prices would have been advanced, making the position of the woolen manufacturer, already hard enough because of the eccentricity of the market, all the more difficult. In addition to this belief that the price limit had been reached, the user of wool felt the need of prudence because of the larger investment in the raw material necessitated by increased cost and the higher bank rates prevailing generally for money. The additional burdens thus occasioned caused more than customary caution.

EXTREME CAUTION NOT EXCEPTIONAL TO THIS COUNTRY.

This deliberate method of purchasers was not exceptional to this country; it was pursued early in the Australian sales and later at the auctions in London, in neither of which markets were the purchases on American account as heavy as in 1905. That higher prices were not paid the grower was largely due to the feeling that the danger point had been reached and that it would be hazardous to accede to his views of values.

That the belief in an agreement to "bear" prices was genuine is evidenced by the large amount of wool consigned to eastern dealers and the formation of the Montana Woolgrowers' Commission Company, with a capital stock of $500,000—5,000 shares at $100 each. Its purposes are to place the growers in

A TYPICAL MODERN SHEEP RANCH

a position to market their wool independently of the wool buyers, the company being authorized to receive wool on consignment, to borrow and loan money, and to conduct a regular wool selling business. Some of the best known sheepmen of the State are directors of the company, the organization of which may have been suggested by a similar company among the livestock men, organized as a protest against increased commissions for selling livestock at the various slaughtering centers.

LEASING OF PUBLIC RANGE OPPOSED.

The proposal to lease the public range has been generally opposed by the sheepmen, though in some associations a minority has favored it. The fear expressed is that leasing means the destruction of the small holder; that the man or corporation with large capital would soon control the range, and the weak man would be forced out of business. While it is said the belief is gaining ground in Wyoming that a grazing tax in the forest reserves has come to stay, oppositon has been expressed to the fees charged for grazing as unreasonable and out of proportion to the benefits derived. The Wyoming woolgrowers at their convention opposed the creation of any more reserves in the State, 9,000,000 acres being already embraced within them.

Complaints concerning the ravages wrought upon the flocks by wild animale, bears, mountain lions, wolves, etc., harbored by the reserves, continue to be made, and Government assistance in their extermination is urged. The Secretary of Agriculture, sympathizing with the request, suggested that forest rangers hunt and trap the pests, but it is thought that without the stimulus of liberal bounties there would be no inducement to perform this needed work. An expert has been sent into the field to study the problem, and some solution may result from his investigation.

CLOSER SETTLEMENT CONTINUES.

Owing to closer settlement in a number of States, grazing lands for large flocks are being lessened continually, this being especially true of the Dakotas and Texas, and in a less measure of Montana. A few years ago in the Bismark land district more than 10,000,000 acres of Government land were subject to homestead entry. A year ago this was reduced to 1,250,000 acres, and at present it probably does not exceed 500,000 acres. During the last fiscal year, ending June 30, nearly 700,000 acres were homesteaded, almost 300,000 acres being taken the last quarter. In South Dakota the same rapid breaking up of the ranges into small farms is occurring, while in Texas more than 400,000 acres were placed on the market during the year, and the State's remaining 15,000,000 acres will be available as fast as existing pasture leases expire. But notwithstanding this tendency to contraction, entailing inconvenience and concern until readjustments are made, it is believed that the grazing lands of the country, which cannot be made available for other purposes under present known conditions of agriculture, amount to at least 300,000,000 acres, an extent equal to one-fifth the area of the United States. With the proper development of this vast tract and its proper management there ought to be sufficient pasturage to sustain not only present but greatly augmented num-

bers of sheep and cattle and to make secure the immense financial interests involved in the industry.

CONDITIONS ON THE RANGES.

Conditions on the winter range on the whole were again excellent, though in some parts of Idaho and Montana the weather was severe and feed was scarce. As a rule, however, no more favorable season could have been expected, and the flocks, having ample feed and being strong from shearing to shearing, came to the pens in good flesh, with wool of good length and sound staple. Wyoming wools, especially, showed evidence of better breeding, plenty of grass, and better care than usual. Winter losses were merely nominal, barring a few localities notwithstanding a severer snow storm in March than any experienced since 1886. Twenty years ago such a storm would have decimated flocks, but now preparation and forethought prevented such waste, the good done by the snow for the summer range more than compensating for the losses it caused. Late cold rains were quite general about lambing and shearing time. The lamb crop was unusually large, and notwithstanding unfavorable weather conditions a very large proportion of those dropped were saved. The summer was also excellent, enough rain falling to make the grass grow and afford succulent pasturage. It cured well, promising abundant feed for the winter; and notwithstanding a severe snow storm in Colorado, Wyoming, New Mexico, and Utah, the latter part of October, the flocks went into winter quarters in excellent condition.

GOOD PRICES FOR WOOL AND SHEEP.

This year, as last, good prices were obtained by the flockmasters for their wool and sheep. In Utah and Wyoming considerable increase over those paid the previous year were secured. In these two States early contracts were made in 1905 at considerably lower rates than were paid in Montana later in the season. This year the prices in Utah and Wyoming were almost on a par with those paid in Montana. While they were a distinct disappointment to the growers of the latter State, they were still remunerative while the growers of the former States were paid considerations perhaps higher than they ever received in their experience. Prices for sheep and lambs remain most satisfactory and the appreciation in the value of such stock within a dozen years is enormous. In 1893 sheep were sold as low as 75 cents and $1 per head; today sheep of no better grade have been sold at $5 and more per head. Prices in 1904 were from $3.25 to $4; one year later $6 and $6.25 were received for the same grade of stock, and range lambs have advanced, until this autumn $6.70 was paid per 100 pounds. Perhaps never before has the industry been so profitable and though prosperity has been experienced for several seasons past there are no indications of the ebb tide appearing.

THE SEARCH FOR A RANGE SHEEP.

The United States Department of Agriculture, through the Wyoming experiment station, is making efforts to develop a range sheep. At present $5,000 are available for experiments, the object being to secure a sheep that will be most useful over the ranges of the western regions. Three hundred

ewes and some Rambouillet bucks have been purchased, and their progeny will be closely selected for improvement.

Another undertaking of interest in Wyoming is the establishment of a test wool-scouring plant to determine the shrinkage. The work will be under the direction of the experiment department of the Wyoming University, the purpose being to make the woolgrowers less dependent upon the views of buyers.

THE WOOL PRODUCT.

Owing to the greater weight of the average fleece, the clip, notwithstanding the small decrease in the number of sheep, is heavier in the grease by 3,426,692 pounds than that of a year ago the heavier fleece being indicated in each of the three sections into which our table is divided. The total average increase in weight is one-tenth of a pound per fleece. The quantity of wool produced on the basis of 38,540,798 sheep, not including pulled wool, is 256,915,130 pounds as against 253,488,438 pounds one year ago. Its equivalent in scoured wool is 100,010,942 pounds.

The detailed statement of number of sheep, weight of fleece, with percentage of shrinkage of wool produced, and the equivalent in scoured wool, the average value per pound and the total value of the clip will be found in Table I.

PULLED WOOL.

The amount of pulled wool has been most carefully considered, and we have found no reason for varying the amount from that of last year—42,000,000 pounds. The shrinkage has been placed at 30 per cent, instead of 33 per cent, making the yield equal to 29,400,000 pounds of clean wool.

The total production of the country for 1906 is, therefore, 298,915,130 pounds, equal to 129,410,942 pounds of scoured wool, 2,883,821 pounds in excess of the estimate for 1905. The excess is partly due to the decreased shrinkage, noticeable in the wools of all sections.

The grades and values of pulled wool (scoured basis) are estimated as follows by Mr. William A. Blanchard, of Boston:

Fine and fine medium	14,000,000 **lbs.**
Medium and coarse	15,400,000 lbs.
	29,400,000 lbs.

Wool Product of the United

STATES AND TERRITORIES.	QUALITY.
Maine	Medium
New Hampshire	25% fine, 75% medium
Vermont	20% fine, 80% medium
Massachusetts	Medium
Rhode Island	Medium
Connecticut	Medium
New Yorkk	33% fine, 67% medium
New Jersey	Medium
Pennsylvania	25% fine, 75% medium
Delaware	Medium
Maryland	Medium
West Virginia	75% fine, 25% medium
Kentucky	Medium
Ohio	45% fine, 55% medium
Michigan	20% fine, 80% medium
Indiana	15% fine, 85% medium
Illinois	25% fine, 75% medium
Wisconsin	20% fine, 80% medium
Minnesota	20% fine, 80% medium
Iowa	30% fine, 70% medium
Missouri	15% fine, 85% medium
Virginia	Medium
North Carolina	Medium
South Carolina	Medium
Georgia	Medium
Florida	Medium
Alabama	Medium
Mississipi i	Medium
Louisiana	Medium
Arkansas	Medium
Tennessee	Medium
Kansas	Fine, fine med., and medium
Nebraska	Fine, fine med., and medium
South Dakota	Fine, fine med., and medium
North Dakota	Fine, fine med., and medium
Montana	Fine, fine med., and medium
Wyoming	Fine, fine med., and medium
Idaho	Fine, fine med., and medium
Washington	Fine, fine med., and medium
Oregon	Fine, fine med., and medium
California	33% fall, 67% spring
Nevada	Fine, fine med., and medium
Utah	Fine, fine med., and medium
Colorado	Fine, fine med., and medium
Arizona	Fine, fine med., and medium
New Mexico	Fine, fine med., and medium
Texas	25% fall, 75% spring
Oklahoma and Indian Territory	Fine, fine med., and medium
Totals	
Pulled Wool	
Total Product, 1903	

States for the Year 1906.

No. of Sheep, April 1, 1906.	Av'r'ge wgt. of Fleece, 1906.	Wool washed and unwashed, 1906.	Percent Shrinkage 1906	Wool Scoured, 1906.	Average Value per Scoured lb., Oct. 1. 1902	1903	1904	1905	1906	Total Value 1906.	States and Territories.
	Lbs.	Pounds.		Pounds.	Cts	Cts	Cts	Cts	Cts		
200,000	6	1,200,000	40	720,000	38	42	50	58	58	$ 417,600	Maine.
63,000	6.2	390,600	50	195,300	41	42	50	57	57	111,221	New Hampshire.
160,000	6	960,000	51	470,400	41	42	50	57	56	254,024	Vermont.
26,000	5.8	150,800	42	87,464	38	42	50	57	57	49,854	Massachusetts.
6,500	5.5	35,750	42	20,735	38	42	50	57	57	11,819	Rhode Island.
26,000	5.5	143,000	42	82,940	38	42	50	58	58	48,105	Connecticut.
725,000	6	4,350,000	50	2,175,000	43	48	55	60	59	1,283,250	New York.
32,000	5.5	176,000	50	88,000	38	42	50	60	59	41,920	New Jersey.
850,000	6	5,100,000	50	2,350,000	48	53	58	63	62	1,581,000	Pennsylvania.
6,500	6	39,000	50	19,500	38	42	50	56	55	10,725	Delaware.
100,000	5	500,000	45	275,000	38	42	50	57	55	151,250	Maryland.
480,000	5.5	2,640,000	48	1,372,800	50	63	65	60	60	823,680	West Virginia.
575,000	4.75	2,731,250	38	1,693,375	38	42	50	60	59	999,091	Kentucky.
1,850,000	6.25	11,562,500	50	5,781,250	48	53	58	63	62	3,584,475	Ohio.
1,500,000	6.3	9,450,000	50	4,725,000	43	49	55	61	60	2,835,000	Michigan.
800,000	6.25	5,000,000	45	2,750,000	43	46	53	58	57	1,567,500	Indiana.
550,000	6.5	3,575,000	48	1,859,000	42	45	52	56	55	1,022,450	Illinois
800,000	6.75	5,400,000	48	2,808,000	40	45	52	65	60	1,684,800	Wisconsin
350,000	7	2,450,000	52	1,176,000	40	43	50	54	53	623,280	Minnesota.
500,000	6.5	3,250,000	50	1,625,000	44	49	55	58	56	910,000	Iowa.
714,264	6.45	4,607,003	48	2,395,642	42	45	52	60	56	1,341,560	Missouri.
10,314,264	6.18	63,710,903	48.4	32,870,403	....	....	....	....	....	$19,357,404	
350,000	5	1,750,000	38	1,085,000	41	45	52	60	59	$ 640,150	Virginia.
205,000	4.25	871,250	42	505,325	38	42	50	56	55	277,929	North Carolina.
50,000	4	200,000	42	116,000	38	42	50	56	55	63,800	South Carolina.
250,000	3.8	950,000	40	570,000	38	42	50	56	55	313,500	Georgia.
105,534	3	316,602	40	189,961	38	42	50	56	55	104,479	Florida.
175,000	3.25	568,750	40	341,250	38	42	50	56	54	184,275	Alabama.
165,000	4	660,000	42	382,800	38	42	50	55	54	206,712	Mississippi.
155,000	3.7	573,500	42	332,630	38	42	50	56	55	182,947	Louisiana.
200,000	4.5	900,000	41	531,000	38	42	50	55	54	286,740	Arkansas.
275,000	4.25	1,116,875	40	670,125	38	42	50	58	58	388,673	Tennessee.
1,930,534	4.1	7,906,977	40.3	4,724,091	....	....	....	....	....	$ 2,649,205	
170,000	7.5	1,275,000	67	420,750	44	46	52	67	65	$ 273,488	Kansas.
250,000	7.5	1,875,000	67	618,750	44	46	52	67	65	402,188	Nebraska.
575,000	6.5	3,737,500	60	1,495,000	47	49	53	69	67	1,001,650	South Dakota.
375,000	6.5	2,437,500	61	950,625	47	49	53	69	67	636,919	North Dakota.
4,940,000	7.25	35,815,000	65	12,535,250	47	49	55	69	68	8,523,970	Montana.
4,531,000	7.25	32,849,750	68	10,511,920	47	49	55	70	69	7,253,225	Wyoming.
2,300,000	7.35	16,905,000	67	5,578,650	47	49	55	69	66	3,681,909	Idaho.
575,000	8.5	4,887,500	70	1,466,250	47	49	53	69	66	956,725	Washington.
1,800,000	8.5	15,300,000	70	4,590,000	50	52	55	69	68	3,121,200	Oregon.
1,750,000	7.5	13,125,000	67	4,331,250	48	50	53	69	67	2,901,938	California.
650,000	8	5,200,000	69	1,612,000	50	52	57	70	68	1,096,160	Nevada.
1,900,000	6.5	12,350,000	65	4,322,500	47	49	55	67	67	2,896,075	Utah.
1,400,000	6.75	9,450,000	67	3,118,500	42	45	52	66	65	2,027,025	Colorado.
680,000	6.5	4,420,000	66	1,502,800	47	49	53	67	65	976,820	Arizona.
2,900,000	5.5	15,950,000	62	6,061,000	50	52	57	70	67	2,132,208	New Mexico.
1,440,000	6.5	9,360,000	66	3,182,400	50	52	57	70	67	2,132,208	Texas.
60,000	6	360,000	67	118,800	42	45	50	63	63	74,844	Oklahoma.
26,296,000	7.05	185,297,250	66.3	62,416,445	....	....	....	....	....	$41,774,774	
38,540,798	6.66	256,915,130	61.08	100,010,942	45.2	48.8	54.1	65.4	63.8	$63,781,383	Totals.
.....	.....	42,000,000	30	29,400,000	39.7	43.4	46.7	57.4	54.3	15,940,000	Pulled Wool.
.....	.....	298,915,130	.....	129,410,942	....	....	....	....	....	$79,721,383	Total Product, 1906

These quantities may again be subdivided into grades, with average values at Boston, thus:

	Pounds	Value per pound, cents	Total Value
Extra and fine A	4,000,000	66	$2,640,000
A super	4,500,000	60	2,700,000
B super	8,750,000	50	4,375,000
C and low super	1,850,000	36	666,000
Fine combing	5,750,000	58	3,335,000
Combing	4,250,000	50	2,125,000
Shearlings	300,000	33	99,000
Total	29,400,000		$15,940,000

SLAUGHTER AND MOVEMENT OF SHEEP.

The total number of sheep killed yearly at four western centers, Chicago, Kansas City, St. Louis, and Omaha, and total yearly receipts of sheep at eastern seaboard markets, Boston, New York, Philadelphia and Baltimore, are reported in the "Cincinnati Price Current Annual," as follows:

Table II.—Seaboard Sheep Receipts and Slaughter at Principal Western Points.

	Western Killings	Seaboard Receipts
1887	1,173,000	3,432,000
1888	1,275,000	3,453,000
1889	1,476,000	3,305,000
1890	1,622,000	3,274,000
1891	1,879,000	3,375,000
1892	2,112,000	3,394,000
1893	3,278,000	3,330,000
1894	3,565,000	4,079,000
1895	3,995,000	4,265,000
1896	4,299,000	3,611,000
1897	4,654,000	3,141,000
1898	4,647,000	2,988,000
1899	5,019,000	2,945,000
1900	4,798,000	3,093,000
1901	5,276,000	3,400,000
1902	5,832,000	3,443,000
1903	5,827,000	3,314,000
1904	5,465,000	3,128,000
1905	5,879,000	2,425,000

WEIGHT AND SHRINKAGE.

The average weight of fleece is 6.66 pounds, an increase from 6.56 pounds in 1905. The weight for 1904 was 6.50 pounds; for 1903, 6.25 pounds; for 1902, 6.50 pounds, and for 1901, 6.33 pounds. The average shrinkage is 61.08 per cent, a decrease as compared with 61.3 per cent in 1905. For 1904 the shrinkage was 61.6 per cent; for 1903, 60.8 per cent; for 1902, 60 per cent, and for 1901, 60.6 per cent.

The estimates of wool production for nineteen years, together with the scoured equivalents for the same term of years, are as follows:

Table III.—Fleece and Pulled Wool, Washed and in the Grease.

	Product	Decrease	Increase
1888 ..... pounds	301,876,121	293,829	.....
1889 ..... "	295,779,479	6,096,642	.....
1890 ..... "	309,474,856	.....	13,699,377
1891 ..... "	307,401,507	2,073,349	.....
1892 ..... "	333,018,405	.....	25,606,898
1893 ..... "	348,538,138	.....	16,519,733
1894 ..... "	325,210,712	23,327,426	.....
1895 ..... "	294,296,726	30,913,986	.....
1896 ..... "	272,474,708	21,822,018	.....
1897 ..... "	259,153,251	13,321,457	.....
1898 ..... "	266,720,684	.....	7,567,433
1899 ..... "	272,191,330	.....	5,470,646
1900 ..... "	288,636,621	.....	16,445,291
1901 ..... "	302,502,382	.....	13,865,707
1902 ..... "	316,341,032	.....	13,838,650
1903 ..... "	287,450,000	28,891,032	.....
1904 ..... "	291,783,032	.....	4,333,032
1905 ..... "	295,488,438	.....	3,705,406
1906 ..... "	298,715,130	.....	3,426,692

Table IV.—Scoured Wool, Fleece and Pulled.

	Product	Decrease	Increase
1888 ..... pounds	136,591,955	3,964,730	.....
1889 ..... "	134,795,350	1,796,605	.....
1890 ..... "	139,628,220	.....	4,832,870
1891 ..... "	139,326,703	301,517	.....
1892 ..... "	145,300,318	.....	5,973,615
1893 ..... "	151,103,776	.....	5,803,458
1894 ..... "	140,292,268	10,811,508	.....
1895 ..... "	125,718,690	14,573,578	.....
1896 ..... "	115,284,579	10,434,111	.....
1897 ..... "	111,365,987	3,918,592	.....
1898 ..... "	111,661,581	.....	295,594
1899 ..... "	113,958,468	.....	2,296,887
1900 ..... "	118,223,120	.....	4,264,652
1901 ..... "	126,814,690	.....	8,591,570
1902 ..... "	137,912,085	.....	11,097,395
1903 ..... "	124,366,405	13,545,680	.....
1904 ..... "	123,935,147	431,258	.....
1905 ..... "	126,527,121	.....	2,591,974
1906 ..... "	129,410,942	.....	2,883,821

VALUE OF THE WOOL CLIP.

Our estimates are based on the value of the scoured pound at the seaboard which for the last five years has been as follows:

Scoured Wool.

	Fleece and Pulled	Total Value	Value per pound	
			Fleece	Pulled
	Pounds.		Cents.	Cents.
1901	126,814,690	$51,164,709	41.1	36.7
1902	137,912,085	60,679,127	45.2	39.7
1903	124,366,405	58,775,373	48.8	43.4
1904	123,935,147	64,948,959	54.1	46.7
1905	126,527,121	80,415,514	65.1	57.4
1906	129,410,942	79,721,383	63.8	54.3

The total value of the wool clip for the year is about the same as last year, being less than one per cent smaller. The average value per pound of the fleece and the pulled wool has decreased 2.4 per cent and 5.5 per cent, respectively. The value of the clip has decreased from $80,415,514 in 1905, to $79,721,383 in 1906.

AVAILABLE SUPPLIES, 1901-1906.

Table V. contains an estimate of the available wool supplies for the year 1906-7, that is, pending the next clip, excluding imports after October 1, and supplies in manufacturers' hands, with the figures for corresponding years given for comparison. It is based on the Boston Commercial Bulletin's record of supplies in dealers' hands on January 1 last, the Department of Commerce and Labor's figures of imports, and the figures of the preceding tables.

Table V.—Available Supplies.

	1901.	1902.	1903.	1904.	1905.	1906.
	Pounds.	Pounds	Pounds.	Pounds.	Pounds.	Pounds.
Wool clip, fleece and pulled.....	309 502,3 8	316,341,032	287,450,000	291,783,032	295,488,438	298,915 139
Domestic wool on hand January 1.....	204,345,500	139,519,718	110,499,572	112,081,000	41,873,811	72,461,443
Foreign wool on hand January 1.....	29,483,500	13,619,600	12,372,000	16,699,000	11,562,000	24,414,000
In bond January 1	54,163,204	31,064,222	28,319,246	33,735,970	41,181,360	56,488 [illegible]9
Foreign wool imported, January 1 to July 1	59,561 310	100,858,377	102,025,924	102,167,315	164,730,358	119,[illegible]37,637
Total	650,054 812	601,402,949	540,666,742	555,466,317	554,835,967	572,176,339
Imports of wool, July 1 to October 1..	.....	34,269,893	38,700,120	36,403,499	44,388,908	35,331,909
Total to October 1	.....	635,672,842	579,366,862	591,869,816	599,224,875	607,508,248

LONDON SALES.

The sixth of the London sales of Colonial wool for 1905 commenced November 28 and closed December 9. The net amount available was 109,000 bales, of which 107,000 were sold, leaving 2,000 to be carried over in this year. The distribution was as follows:

Home consumption ..... 51,000 bales.
Continent ..... 54,500 bales.
America ..... 1,500 bales.

About 82,000 bales of the new clip appeared in the catalogues. The sales were largely attended, and the competition was animated. The series closed with a good tone, the market being practically cleared of all supplies.

ENGLISH MARKET CONDITIONS SUMMARIZED.

Messrs. Buxton, Ronald & Co., in their annual report for 1906, summarize market conditions as follows:

Merinos all around are now par to 5 per cent lower than a year ago.

Crossbreds, fine qualities, about 7 1-2 per cent higher, medium and coarse qualities, 10 per cent and 2 1-2 per cent higher, respectively, than a year ago.

On the question of supply, evidence would seem to show that the only important increase will be once more from Australasia, which it is now estimated will market some 150,000 to 170,000 additional bales. South African conditions

have been such as to render an increase extremely unlikely. South America's figures should also show but little change, as the good season in Uruguay will be about balanced by the reduced quantities from the South, where the season has been unpropitious and losses have been severe.

From January, 1905, to July, 1906, values of cross bred wools were well nigh continually in the ascendant, and the culminating point was reached just previous to midsummer, when the highest prices known for thirty years were current.

The total Australasian wool production for 1905-6 was 1,869,500 bales; 1904-5, 1,596,000 bales; 1903-4, 1,367,000 bales; 1902 3, 1,415,000 bales; 1901-2, 1,664,500 bales.

The increase over last year is 273,500 bales, the four districts of New South Wales, Victoria, Queensland and New Zealand supplying very considerable increases, while South Australia showed a diminished production of 38,000 bales. In the colonial markets the sales of wool were 72 per cent of the production, an increase of 4 per cent over last year and 10 per cent greater than the record of 1901-2. Although the increase in the size of the clip was 273,500 bales, but little more wool was consigned to London than in the previous season. The lambs' wool dealt in amounted to 86,190 bales. Crossbred sales in the Australasian markets aggregated 335,727 bales or 25 per cent of the total sales, exactly the same proportion as last year. The actual increase sold was 63,272 bales. In Tasmania and Victoria there was a considerable percentage of increase in crossbred wool, due to the increased attention paid to sheep and lambs intended for the frozen meat trade.

While the total clip is increasing rapidly in the number of bales reported, it must be taken into account that some, to whose opinion deference must be shown, consider that the present bales contain fewer pounds than formerly, and that less scoured wool is exported than was the case some years ago. This seems to be supported by the fact that though the gain in value per bale is but 6 3-4 per cent the average advance per pound has been more than that, Dalgety attributing the discrepancy "to the tendency of growers to still further reduce the weight of their bales." If these contentions be true, then it may be that fewer pounds of wool available for the user were produced than the number of bales exported would indicate.

A noticeable fact in the production is that whereas previous to the drought 120 millions of sheep yielded 1,959,811 bales, last year 93 million sheep produced 1,869,455 bales, indicating a considerably increased average weight of fleece. Twelve years ago it took the fleeces and skirtings from 61 sheep to fill a bale, but the past year 50 sheep did it, the price per bale meanwhile, rising from 10 pounds 10 shillings to 13 pounds 10 shillings, and the net return per sheep increasing 1 shilling 11 1-2 pence.

From the season of 1894-5 to that of 1903 4 the clip of Australasia declined over 620,000 bales. Owing to the wonderful recuperative powers of the country that loss, registered in nine years, will be made good in one-third the time, and a clip surpassing that of 1894-5 is expected for the present season.

AUSTRALASIAN SHEEP.

The total number of sheep in Australia, Tasmania and New Zealand at the end of the year 1905 was 93,836,548; 1904, 83,319,517; 1903, 75,765,447; 1902, 73,766,194; 1901, 92,358,824.

The flocks, notwithstanding the multiplication of rabbits, which are said to consume 40 per cent of the available feed, the division of estates for closer settlement, and the large number of sheep slaughtered for home consumption and export, showed during the year the great increase of 10,517,031 head, the largest yearly addition which perhaps has ever taken place.

As a result of this unusual increase predictions are made that the clip for the current wool year will be in excess of 2,000,000 bales and the largest ever produced. The record clip is that of 1894-5 of 1,959,811 bales, and it is conservative to conclude that from an increase of more than ten million sheep there will result at least enough bales to carry the total above the two million mark. Estimates of the increase vary from 160,000 to 250,000 bales, some favoring the former figure base their opinion on a lighter yield of one pound per sheep than last year over a large area. As a guide it is well to recall that the increases in 1904 and 1905 were 229,000 and 273,500 bales, respectively, while the increases in the number of sheep were 7,554,070 and 10,517,031, respectively.

ARGENTINA AND URUGUAY.

In the season of 1904 5 the production of wool in Argentina and Uruguay was 210,100 bales; in 1903-4, 215,100 bales; 1902-3, 247,400 bales, which is the largest quantity in any year except the season of 1897-8 which produced 248,500 bales.

The number of sheep in Argentina in 1905 was something above 75,000,000.

ARGENTINE WOOLS IMPORTED INTO UNITED STATES.

During the past three seasons more Argentine wools have been imported than formerly. The following table shows the increase has been altogether in the wools of Class I.:

Imports Into United States of Argentine Wools for Years 1904, 1905 and 1906, in Pounds.

YEAR	Class I	Class II.	Class III.
1904	18,018,443	100,548	10,049,069
1905	41,094,617	362,562	6,238,388
1906	36,352,480	.....	5,815,447

The amount imported in 1906 of Class I. wools is more than double the total of 1904, and the proportionate decrease over 1905 is less than that of Australasian wools. With these increased imports comes a corresponding increase in the direct shipments—16,014,308 in 1904; 32,688,007 in 1905, and 29,582,923 in 1906. The imports of Class III. wools have decreased almost one-half.

The above figures show that what is occurring in England is being experienced in this country—increased use of Argentine wools, in the consumption of which the continent has hitherto held an almost complete monopoly. Bradford's imports from Argentina in 1904 were 13,367,083 pounds, and 26,675,467 pounds in 1905.

The imports of Argentine wools into the United States during the last fiscal year, both through Europe and direct, amounted to 42,167,927 pounds, a decrease of 5,527,640 pounds as compared with last year. Of the total quantity 36,352,480 pounds were Class I. wools, and 5,815,447 pounds were Class III. wools; of the decrease all but 422,941 pounds were in Class I. wools.

Wenz & Co., under date of May, write concerning the Argentine flocks and season as follows:

Climatic conditions being again favorable, flocks were in good condition throughout the year; lambing proved most satisfactory and there was little mortality. In spite of this the clip seems to be no larger than that of the previous year.

Shearing was somewhat delayed by rain and it was not until the beginning of October that the first wools made their appearance. The clip taken as a whole was a good one. It was better grown, about as fine and clean as the preceding one and, if anything, lighter in grease. Southern wools were particularly good, while those from the pasto fuerte country were again poor.

There was an active inquiry for merinos throughout the season. Strange to say medium grades which were bought for the terminal markets sold at times actually dearer than super wools. Entre Rios wools were good and were taken mainly for manufacturers' account. Crossbred lambs met a strong demand from the same quarter and frequently sold at higher nominal prices than the corresponding fleece wool, which was an entirely new feature.

America, though not yet counting as one of the chief buyers, took a fair amount, about the same as last year, to which must be added the export from Montevideo, which shows that South American wools are now a standard quality in that country.

The sheep that are ousted by the plow from the northern territory and from those parts of the province of Buenos Ayres which lie within easy reach of the ports are moved south to Rio Negro, Chubut, and Santa Cruz. Of the above the first named seems best adapted for raising sheep.

THE COURSE OF PRICES.

In contrast to last year there was a recession in prices all along the line in 1906, the largest decrease being 3 3-4 cents in Texas spring scoured. Ohio XX, territory fine medium and Kentucky three-eighths showed losses of from two to three cents a pound. In crossbred tops there was some fluctuation, the price dropping from 34 cents in October, 1905, to 32 cents in January, 1906, advancing to 36 cents in April, since which time the tendency has been downward until the price is now 33 cents. The general course of 60's Botany was about the same as that of crossbreds, a decline of 54 cents to 52 cents being registered during the year under review.

Table VI.—Wool Imported Into Boston, New York, and Philadelphia. By Principal Countries of Production.

Year Ending June 30	Russia	Turkey	United Kingdom	Argentina	Uruguay	Chinese Empire	British E. Indies	British Australasia	All Other Countries	Total
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
1896	13,150,509	17,987,753	14,229,068	32,281,341	9,048,350	26,084,232	9,897,531	72,995,090	30,264,448	225,938,322
1897	19,706,449	20,239,717	27,759,419	64,969,556	15,004,257	21,461,478	10,989,980	109,912,851	42,451,375	332,495,042
1898	16,999,224	9,282,762	12,434,332	16,734,279	1,309,974	20,369,294	6,445,063	31,877,252	14,630,832	130,083,012
1899	13,373,350	5,697,377	9,156,624	7,967,657	149,573	14,276,124	6,949,491	7,249,740	10,688,700	75,498,636
1900	18,869,252	9,577,147	20,393,063	20,064,279	1,072,307	30,998,289	9,397,020	23,121,394	19,171,121	152,663,872
1901	13,720,814	8,355,941	16,919,793	14,358,218	783,075	9,181,105	4,146,698	22,570,030	11,482,847	101,518,521
1902	16,322,231	12,215,316	21,737,509	45,287,370	533,634	18,843,396	6,813,401	26,559,531	13,930,722	162,243,110
1903	19,455,312	15,440,933	31,778,842	23,265,209	541,384	26,032,976	11,850,446	25,238,498	18,390,678	171,994,458
1904	23,403,797	17,742,473	26,807,042	28,168,060	112,208	24,912,491	10,088,556	25,792,098	13,374,315	170,401,040
1905	23,790,451	23,454,937	25,213,450	47,695,567	7,740,309	30,023,157	12,202,135	56,212,733	16,460,214	242,792,953
1906	21,180,755	16,032,199	21,615,963	42,167,927	5,807,190	30,233,762	6,011,319	39,548,551	11,242,388	193,840,054

Note—These figures represent about 98.5 per cent of the total quantity of wool imported into all ports of the United States.

Table VII.—Number of Sheep, in Principal and Other Countries, According to Latest Official Data and Estimates.

Year Book of the U. S. Department of Agriculture for 1905.

Country	Year	Sheep
Total United States (including Hawaii and Philippine Islands)		51,001,869
United States:		
Continental—		
On farms	1905	50,631,619
Not on farms	1900	231,301
Porto Rico	1899	6,363
Total United States (in North America)		50,869,283
Canada:		
Ontario	1905	1,324,153
Manitoba	1905	18,508
Other	1901	1,435,319
Total Canada		2,777,980
Central America:		
Costa Rica	1905	52
Guatemala	1898	77,593
Honduras	1904	11,806
Mexico	1902	3,424,430
Newfoundland	1901	78,052
West Indies: British—		
Dominica	1899	1,088
Grenada	1901	1,975
Jamaica	1904	20,136
Turks and Caicos Islands	1904	125
Virgin Islands	1904	300
Cuba	1899	9,982
Dutch	1903	28,117
Guadeloupe	1906	11,731
Total North America		57,312,650
Argentina	1895	74,379,562
British Guiana	1904	14,600
Chile	1902	1,009,159
Columbia		745,000
Dutch Guiana	1903	111
Falkland Islands	1904	702,444
Paraguay	1900	214,058
Uruguay	1900	18,608,717
Venezuela	1899	176,668
Total South America		95,851,319
Austria-Hungary:		
Austria	1900	2,621,026
Hungary	1895	8,122,682
Bosnia-Herzegovina	1895	3,230,720
Total Austria-Hungary		13,974,428
Belgium	1905	235,722
Bulgaria	1901	7,015,385
Denmark	1903	876,830
Faroe Islands	1903	91,034
Finland	1903	919,333
France	1905	17,800,965
Germany	1904	7,907,173
Greece	1902	4,568,158
Iceland	1903	486,347
Italy	1890	6,900,000
Luxemburg	1900	19,689
Total Russia (European)	1905	59,665,801
Servia	1900	3,061,759
Spain	1905	13,025,512
Sweden	1904	1,105,903
Switzerland	1901	219,438
Turkey and Crete		10,000,000
United Kingdom:		
Great Britain	1905	25,257,196
Ireland	1905	3,749,313
Isle of Man and Channel Islands	1905	70,229
Total United Kingdom	1905	29,076,738
Total Europe		187,693,892
British India	1904	**21,577,896
Ceylon	1904	91,767
Cyprus	1905	***235,840
Hongkong	1904	6
Japanese Empire	1905	2,769
Philippine Islands	1903	30,428
Russia, Asiatic:		
Transcaucasia	1902	6,302,258
Four provinces of Central Asia	1903	9,113,000
Four provinces of Siberia	1903	3,773,000
Other	1903	5,443,000
Total Russia (Asiatic)		24,631,258
Straits Settlements	1904	43,920
Turkey, Asiatic		45,000,000
Total Asia		91,613,884
Algeria	1904	8,611,747
Basutoland	1904	2,794
British Central Africa	1904	3,696
Cape of Good Hope	1904	11,818,829
German East Africa	1905	1,560,000
German Southwest Africa	1903	****186,742
Dagos	1902	1,610
Madagascar	1906	333,454
Mauritius	1904	756
Mayote	1906	124
Natal	1904	726,752
Orange River Colony	1904	3,145,685
Reunion	1903	4,583
St. Helena	1901	2,094
Seychelles	1904	200
Transvaal	1903	200,000
Tunis	1904	1,094,761
Total Africa		27,693,836
Australasia:		
New South Wales	1904	34,526,894
Victoria	1904	10,167,691
Queensland	1904	10,843,470
South Australia	1905	5,874,979
Western Australia	1904	2,853,424
Tasmania	1905	1,556,460
Total Commonwealth		65,822,918

Country	Year	Sheep	Country	Year	Sheep
Malta	1905	18,529			
Montenegro	.....	400,000	New Zealand	1904	18,280,806
Netherlands	1904	606,785			
Norway	1900	998,819	Total Australasia	.....	84,103,724
Portugal	.....	3,064,100			
Roumania	1900	5,655,444	Fiji	1904	1,204
			Hawaii	1900	102,098
Russia, European:			New Caledonia	1906	9,442
Russia proper	1904	49,192,800			
Poland	1904	2,835,000	Total Oceania	.....	84,216,468
Northern Caucasus	1905	*7,638,001			
			Total	.....	544,382,949

* Including goats.
** Of which 252,763 in Alwar include goats
*** Exclusive of animals less than 1 year old.
**** Exclusive of the Windhuk district, in which the sheep and goats were estimated at 2,630.

The foregoing table shows the estimated flocks of the principal wool growing countries of the world. Some of the figures are ten years old, but if they all correspond as closely with present numbers as do those for Argentina, they will be accepted as very near to accuracy. The difference between the figures given for the United States and those of our estimate is due largely to the different dates taken, and the fact that ours include only sheep suitable for shearing.

SHEEP SHEARING.

Since the introduction of machine shearing a few years ago, the old system of hand shearing has been rapidly superseded. In many, perhaps most instances, where machines were installed, the primary idea seemed to be that a material reduction in the price paid for shearing would necessarily follow or could be enforced. But, as in the case of the introduction of every other kind of machinery which requires human skill to operate, it was soon found that the very best results came from the most skilled and therefore the highest priced hand-shearers. Consequently there has been no saving of cost through reduction of wages, but, on the contrary, the scale is materially higher than it was before the machine plants were established. The chief advantages which the new system possesses are speed, immunity from mutilation, and close shearing. Tests made at a plant near Harlem, where 100,000 sheep were shorn, show that the fleece gained in weight from one-half pound to one and one-quarter pounds over hand shearing, with an average for the whole band of three-quarters of a pound a head. As the cost of shearing at this plant was 14 cents, and the wool was sold at an average of 20 cents a pound, it will be seen that close shearing by the machines effected a gain which exceeded the total cost of shearing by $1,000. Particular attention was also paid to ascertain if close shearing in one season would affect the weight of the fleece at the next shearing, and this was found not to be the case. The records of individuals carefully kept showed no diminution in weight. Under such circumstances it is easy to see the practical abolition of the old style hand shearing system except in such places as maintain too few sheep to support a plant or whose distance from one makes it impossible to drive the sheep to it.

Malta has the record for the greatest number of sheep shorn at any one place, and Glendive that for the number of fleeces taken in a single day.

On June 22, 1906, at the plant of S. S. Berg, Glendive, Al. Dibble, of Aurora, Ill., sheared 265 lambs in 9 hours and 25 minutes, breaking the former record made at Columbus, Mont., by 30 head. This is believed never to have been equalled in any machine plant in the United States.

The Hand and Machine Shearers' Union, organized in Butte in 1901, held its annual convention in that city in July, 1906. It is a remarkable fact that not a single strike involving members of the organization was reported for the entire season. About 1,700 out of a total membership of 2,100 was represented. The scale of nine and ten cents a head is now universally in force, and in many places in Montana an advance over these prices was paid. The delegates reported that both hand and machine men were in demand and that there was no difficulty in securing recognition of the union and its regulations. An especial effort is to be made to secure as members of the organization every shearer in the United States. The president receives a salary of $1,200 a year and heretofore has been required to devote his entire time to the work of the union. This year he will be allowed to engage in other work during the slack season from September 1 to February 1, as he may see fit.

HOGS.

It is so difficult to reconcile the variance in the figures as given by the Agricultural Year Book and the assessment roll of the State upon the number of hogs in Montana that no attempt will be made to do so. The Year Book gives the number as 59,896, on Jan. 1, 1906, while the number reported to the Board of Equalization was 12,155. There is no means available for verifying either of these figures and the reader may take his choice. However, upon reliable information it is believed that there is at least one county in the State in which the number of hogs equals the returns for all the counties to the board. In any event, even if the greater number is correct, there is plenty of room for an increase in this line of industry to supply the needs of the people. Hundreds of carloads of pork and pork products are shipped into the State which should by all means be raised and slaughtered at home. The business is highly profitable, and it has been thoroughly demonstrated that first-class pork can be produced without corn if alfalfa, clover, peas, spelz or barley be substituted, and all these grow to perfection in Montana.

So attractive are the possibilities of this business that Mr. F. Neidringhaus, a St. Louis gentleman, has established an extensive farm in Dawson County intended primarily for breeding hogs. This is the first large enterprise of this character in Montana, and it is believed to be the first in the Northwest.

The ranch contains about 4,000 acres of Missouri River bottom land about 45 miles east of Glasgow. A 65 horsepower traction engine is used in plowing, hauling 10 14-inch gang plows, and another engine is used to haul freight and supplies to the ranch. Fifteen hundred acres were under cultivation in 1906, and this area is to be largely extended. Irrigation is provided for by a

big pumping plant with gasoline engines. The breeds used are Berkshires and Poland Chinas, and 1,200 brood sows and 100 boars comprise the original stock. It is expected that not less than 10,000 hogs will be ready for market each year, when the farm is in full operation. The ranch was entirely covered with sage brush as high as a man's head when breaking was begun, but the soil is deep and very fertile.

Dawson, Ravalli, Gallatin, Carbon and Fergus Counties are the only ones reporting more than 1,000 hogs, the first named having 2,615 and the last county having 1,048.

There are indications of a decided increase in this line of industry, market and other conditions warranting much larger investments of capital in the production of this staple article of food.

HORSES.

Not so many years ago conditions in the Montana horse market were such that upon completion of the fall work many teams were actually killed deliberately, it being cheaper to purchase a new one in the spring than to winter the old one. Happily, this day has passed; it is to be hoped forever. The high price of horseflesh and the persistent demand for work and driving horses, together with the fascination the business possesses for so many people, has stimulated production in many localities of the State and there are many extensive and highly equipped stock farms in Montana that would do credit to any state in the Union.

Sales are held at Miles City and Dillon that attract horses and buyers from all parts of the country, and thousands of animals are sold each year. Even the ponies from the Indian reservations have met with ready sale, and the herds are much depleted. Prices are very high and good teams are in demand at almost any figure.

The Year Book gives the number of horses and mules in the State on Jan. 1, 1906, as 239,149, and there were returned for assessment the same year 182,833. There seems to be very little, if any, discrepancy in these figures, for is it estimated that at least 30,000 head were sold out of the State during the first six months of the year. During the year 1905 the shipments of horses aggregated 26,000, a decrease of 11,932 from the year before.

MULES.

Considerable attention is being paid to raising mules, which meet with ready sale at good prices. A large shipment was recently made from Beaverhead County to Canada which netted large returns.

Indeed, conditions in the horse market and for the breeders may be said to be highly gratifying to all concerned, and the prospects are good that they will so continue indefinitely.

From the last estimate made by the Department of Agriculture it appears that the farmers' horses have never before been so numerous nor in the aggregate so valuable. First threatened by the bicycle, and later by the electric car and automobile, neither one of these nor all combined have scared the farmers' horses into diminished numbers or lower prices. On the contrary, horses on all farms in the United States are worth $1,200,000,000, or nearly as much as the farm crop of 1905, and their number was over 17,000,000. Mules also are steadily increasing and are worth $252,000,000.

LABOR.

Conditions affecting Montana workingmen have been generally very satisfactory during the past two years. Strikes and lockouts have been fewer than for any like period perhaps in the whole history of the State. The general upward trend in affairs incident to high prices and extending development in the great copper industry and all other sources of mineral production; the activity in railroad building and government irrigation enterprises; the curtailment of the lumber output of other states, and the consequent demand upon our own mills to supply this deficiency; the construction of dams, power plants, and the necessary pole lines for conveying power and light; the steady increase in building operations, farming and new industries, have combined to make a steady demand for labor that, in certain localities, has at times reached an acute stage. That these conditions have prevailed for two years without serious difficulty and with so few cases of extraordinary demands by the employes, speaks volumes for the discipline and good judgment of the organizations of workingmen and women that fill so large a place in the industrial life of Montana.

Notwithstanding the feeling in a very few sections of the State that certain unions have exercised their power to enforce conditions that seem arbitrary and unjust, the fact remains that whatever advance in wages or reductions in hours have taken place during 1905 and 1906 have been peaceably accomplished in the main, and are simply an evidence that the employes are now enjoying, in some measure at least, the much heralded prosperity of the country.

It is also a notable fact that up to the present time there is absolutely no record of failure in any line of business because of union regulations or wages; and that no matter how strong a protest business men may make against the so-called tyranny of labor organizations, not one of them is willing to take his business out of a strongly unionized, high-wage community into one where the standard of living is such as necessarily accompanies ill-paid labor. Indeed, the most strenuous objector to the unions invariably declares himself to be in favor of high wages; every citizens' alliance has so declared, but just how wages are to be maintained without organization and concerted action by the employes is not made clear. Experience has proven that the exigencies and stern necessities of modern business and the competitive system, to say nothing of innate greed, will not allow one employer to make concessions in wages and hours while others in the same line of business do not. The fierce competition compels all alike to bargain for labor as they do for

raw material, at the same time driving the small manufacturers out of business or into great trusts and combines where the personality of the humane employer is swallowed up and disappears as completely as though he were not. It is therefore idle to talk of allowing this grave question to be settled by employers alone; they could not do it if they would.

Experience has also proven conclusively that individual bargaining in these days of gigantic enterprises is a weak, cumbersome and unsatisfactory method. There must be some system of collective bargaining, through which a minimum wage scale and other satisfactory arrangements can be mutually agreed upon, and, for the present at least, this system must recognize the labor organization as a factor in such settlements. It is here from necessity and not from choice; it can neither be ignored nor forcibly destroyed. Let those who would seek to do either take heed from the lessons of England, Australia and New Zealand, and let the workingmen or America study well the conditions as they exist today in those countries. Repression and denial of the right of organization there resulted in the formation and success of the labor party, and will eventually bring about the same result here. Those who are interested are respectfully referred to Mr. Russell's articles entitled "Soldiers of the Common Good," which have been running in a popular magazine during the past year. These are the greatest economic articles that have ever appeared in any periodical.

As to the misnamed and misjudged "extortions" of labor unions, there is only this to be said: Wherever such conditions exist, or in whatever instances unwise action is attempted in the way of enforcing concessions from employers that are unwarranted, obnoxious or oppressive, the law of equity becomes operative, and failure ensues. Organizations that adopt a practice of "squeezing to the limit" will receive neither the support of public opinion nor that of their fellow unionists. Nor can any single line of mechanics force and maintain their scale far in advance of that of their fellow workmen. Just as general conditions regulate the minimum level of wages, so they will regulate and control the maximum. Again, the tendency of wages is downward, not upward. The low man will seek to benefit himself always, it is true; but he may be able to do that and still not demand or receive as much in wages as the man he seeks to displace. Therefore, it is generally recognized as a trade union principle that it is more to the advantage of the high-wage mechanic to assist those who are below him to better their condition than it is to seek an abnormal level of wages for himself. And it is a fact that wherever this principle is abandoned or ignored retribution is sure to follow.

Nor should the humanitarian side of the question be ignored. The unions stand for men against dollars, always. They object, and rightly, to being simply considered as a commodity; they object to the heartlessness of the modern system which maintains itself upon the discovery that it is cheaper to pay wages to men, women and children than it was to own them; they deny emphatically that the owner of a factory is also entitled to the ownership of sufficient labor power to make that factory profitable; they originated and lead

in the crusade against child labor; and they have forced the enactment of every law for the protection of the toiler in health, limb and life that is upon the statute books of the State and Nation. Awful as is the sacrifice of life and limb to modern civilization today, the credit of whatever degree of immunity is enjoyed—of all restrictive legislation and of all facilities for the recovery of damages—belongs to the labor organizations, wholly and alone. They are not alone a great factor in humanitarianism, but they are the living, breathing, brain-possessing factor in the production of wealth. It is labor alone that gives life and value to capital. All the millions of earth will not produce an atom of wealth until galvanized into power by the magic touch of labor. The combination, then, of these two forces being necessary, and capital being absolutely dependent upon and secondary to labor, what shall be said of the arrogance and shortsightedness of the capitalist who slights or ignores the rights of those who devote their very life to his service and coins their brief existence into dividends for his benefit, who, boasting, declares his right and determination to conduct his business as he sees fit. In every sense of the word it is not his business. The blood, the energy, the brains, and the very lives of men as good and great as he have entered into it. Without their services there could have been no business. Therefore these human beings, the mainspring and essence of the combination, co-partners with capital in the production of all wealth, have a right to be heard upon the all important question of the equable distribution of the joint product. In every partnership there is an amicable, mutual understanding as to how profits are to be shared which is rigidly adhered to if the association is peaceable or extended. So in this partnership or association for the production of wealth under the wage system, the same mutual agreement must be entered upon and faithfully adhered to.

Eventually the wage system will be abandoned, for it carries within itself the elements of its own destruction. The weak point is the private ownership of capital. It is recognized that in the production of wealth both labor and capital are necessary; the one supplements the other. But there is no law, human or divine, that requires the private capitalist in the combination. He is the fifth wheel and may be eliminated at once and forever without destroying production or retarding progress. Substantial proof of this is found in thousands of cases of successful co operative enterprises throughout the world, in our own postoffice system, and in the nationalizing of industries in Japan and other countries. In these and many other instances private capital and the private capitalist have both been dispensed with, but how absurd it would be to attempt to do away with the labor features of these institutions. It is the one essential upon which all else depends. It has chosen the union through which to make known its wants and desires, and by which to defend itself from wrong and advance its interests. Unmindful apparently of its overwhelming power in other directions, the great labor giant continues to put forth its plea for fair treatment rather than to exact a full measure of reprisal.

There is one other point made by those who are not in sympathy with

the chosen vehicle for the advancement of the interests of labor, which is supported by no less authority than the Supreme Court of the United States, and that is the "freedom of contract." This doctrine maintains the inalienable right of the individual to contract for the sale of his labor without interference or restriction, at any price or upon any terms he may choose. Many elements enter into the consideration of this momentous question, each qualifying in a degree, not perhaps the abstract truth of the postulate, but its application and operation relating to present day conditions. There is no disposition to deny that, simply considered as an individual, abstract right, without regard to his fellows and under certain circumstances, a man's labor power is his own, and, therefore, he may dispose of it as he will.

But no man can live unto himself alone; his right to do as he pleases with his own extends only to that point where his action interferes detrimentally with his fellowman's rights. Now, the chief of all human rights and duties is that of providing for the livelihood, welfare and education of the family, and this no man may neglect or ignore. Therefore it being an economic fact that the general tendency of wages is toward the lowest point that will sustain life, and that with all restrictions removed the man who can live cheapest will obtain and retain employment, the first application of this rule of "freedom of contract" strikes a blow at the greatest and most sacred institution of life—the home.

The man with a large family cannot support and educate them on the same income as the one with a smaller or no family; nor can a man and wife live as cheaply or upon the same standard as the single man. The former, then, are either forced to accept the wages upon which it is possible for the single man to exist, with all the misery and privation which it entails, or remain idle. In either event, "freedom of contract" has enabled one man to encroach upon the rights of his fellow; has lowered the standard of living, and deprived the growing generation of the advantages of an education, thus handicapping their whole future existence and detrimentally affecting society. With all due respect to the Supreme Court, and those who uphold "freedom of contract," it is submitted that the rights of the individual are not paramount to the rights of all, and that when the evils above shown are the result of the exercise of such individual rights which all society must bear in common, they may, and of right should be restricted.

The union, in assuming the right to control wages, never attempts to name a maximum scale, but confines itself srtictly to establishing a minimum rate for the poorest and slowest employe, whose purchasing power will insure a fair standard of living and an education for the average sized family.

It also recognizes that the payment of this scale entitles the employer to the very best class of labor it will buy, and that special skill and service may be obtained at will for as much above the scale as an employer is willing to pay. In this manner the union has established and is now maintaining the highest average standard of living in the known world. Freedom of contract as distinct from collective bargaining must inevitably result in lowering this standard, the disruption of happy homes, child labor, and other evils.

Again, the doctrine of "freedom of contract" would not be objectionable in the least if the powers that support it and enforce it by law would only carry it to its ultimate and inevitable conclusion. If a man possesses the right to sell his labor at any price he sees fit, and the right to work for whom and under what conditions he pleases, and must not be interfered with in the exercise of these rights by any act of his fellow workmen, does it not follow logically that this right cannot be jeopardized nor abridged by any other power? But men are denied every hour in the day the right to make a contract to labor when they are turned away from their employment and seek another job. The whole truth of the matter is that this so called "freedom of contract" is no contract at all. It is a one-sided affair that lasts only so long as it may answer the purposes of one party to the agreement, and that is not the party for whom this great boon of freedom is so vociferously demanded.

Any just and equitable contract must have two sides, the one party to deliver or perform and the other to accept. If, then, the union must not interfere with the individual in his employment, why should the employer have the right, not only to interfere, but to withhold employment altogether. It seems that here the law of freedom is altogether faulty, and that to be fair and just it should be so extended as to give an absolute guarantee that, having exercised his own right of contract without regard to any person but himself, the other side or party to the contract should also perform his part in uninterruptedly supplying the opportunity to labor, not in charity or for profit, but as an absolute right, and not to be terminated except by mutual consent. There can be absolutely no equity in the contract unless this be done. How radically different actual conditions surrounding the usual contract between employer and employe are does not need to be stated here. Whether times be good or bad, the workman is retained as long as he is profitable or agreeable, and his contract is terminated without a single thought or care. What then becomes of his inalienable right to labor? When any great corporation decides to close operations in all its departments, into what nook or corner of the universe does the "freedom of contract" and its sacred right to labor retire? These are pertinent questions that demand an answer.

Finally, when freedom of contract compels men to work too long hours for too little pay; when it condemns women to slop-shop and tenement house conditions; when it drives babes of idle fathers into the mills or factories to work a twelve hour day or night shift for a miserable pittance; when it destroys the home and lowers the American standard of living to that of foreign countries, then, indeed, is this freedom bought with too dear a price, and the workingmen of this country will naturally continue to struggle along with a little less of the so-called "freedom of contract" and a little more of wages and shorter hours which they have thoroughly learned by experience can only be secured through the power and strength of associated efforts within their own class.

The union has a mission to perform and will exist and flourish until something better is adopted in its place. The individual toiler is as helpless

to protect himself against the necessities of the present system as is the small merchant or manufacturer to make headway against the department store or trust.

"Freedom of contract," as it is administered by the courts, is a myth—a delusion and a snare. It has never been invoked except to defeat a strike, and it has never achieved a permanent increase in wages or a reduction in hours. It has neither power to protect the individual in his employment, nor to advance the interests of the community as a whole. Its logical and inevitable operation is subversion of human progress and true liberty. Its beneficent protection is invoked, not by the helpless, oppressed toiler, but by the rich and mighty employer of labor, who piously demands freedom for women and children forced into cheerless, hopeless, pitiless toil, that barely suffices to sustain life.

Industrial conditions must be vastly changed from what they are today before American workingmen and women will worship at the shrine of this false god of the employers. This numerically strong but economically weak class is slowly coming to understand the indispensable part which it supplies in the great science of wealth production, and is confident that time will surely evolve a just and equable plan for the distribution of that product.

America may be said to have solved the problem of wealth production, for in this direction she excels all the world. The existence, however, of countless industrial evils, well known and generally recognized, not only proves conclusively that the correlative and most important problem of distribution remains unsolved; but that, aside from the feeble and sometimes misdirected efforts of labor organizations, supported by a small class of scientists and political economists, no effort is being made in this direction whatever.

Impartial history will give credit where credit is due, and place the unions in the vanguard of those who recognized the injustice and inhumanity of the present system, and sought by every means in their power to replace it with one more humane and sensible. Nor should there be any mistaken notion that the adoption of laws that will more equably secure to the toiler a fuller or even full measure of the product of his toil, will prove detrimental to other classes of society or to the country.

In New Zealand, where this class of legislation has reached a point unequaled in any other commonwealth on earth, the direct opposite has been proven. Conservative business men who looked upon all labor laws with suspicion and distrust now acknowledge them to be sound in basis and practical in operation, and that this legislation was not alone for the benefit of the worker, but for the whole community as well.

The Secretary for Labor in that far-off country, in a personal letter to the Commissioner of this Bureau, uses this language: "There is a kind of employer who would never pay a workman two dollars a day if he could by any means induce him to work for one dollar; nor would he pay one dollar if through stress of illness in the family, or hunger, and absolute want, the man could be hired for twenty-five cents. To such men any law interfering

with their anarchistic ideas is a tyranny and an outrage. However, all employers are not of this baser sort. There are many whose names and positions in the industrial world stand high (and these can be quoted) who speak strong words both for our labor laws and for their administration. Indeed, sometimes a gloomy thought flits through my mind, questioning whether, after all, much of the legislation I thought out for the good of the workers has not advantaged their masters far more, and that the very astute business man has even yet got the flour and plums out of the pudding and left the worker only the pudding bag to sniff at. But I am reassured when I look around and notice how contented and prosperous the New Zealand worker is, and how his lot has been improved in spite of the world-wide rise in prices. Bitterness and class feeling have been almost eliminated from his character, and though English trade union visitors deplore the loss of the combative spirit, I notice that having officials like myself to see that wages are fairly paid, produces a better feeling than formerly existed when the wages man was daily trying to squeeze a few cents more out of his employer, who was kept in a state of constant resistance to individual demands. With the death of strikes, lockouts, picketing, and all the attendant horrors, much is forgotten that may well be forgotten.

"This happy condition was brought about and is secured through our system of industrial arbitration.

"In America. 'Compulsory Arbitration,' as it is called (a thrice-accursed nickname which has set the liberty loving citizen against it) is opposed mainly on two grounds—(1) that the supreme court judge cannot be relied on for impartiality against the pecuniary pressure of powerful trusts; (2) that it is to the interest of labor leaders to keep their tens of thousands of trade-unionists away from arbitration lest the institution of a court should take away from those labor leaders the issues of industrial war or peace."

The American people have much to learn from their friends across the western sea, and the present trend of affairs in this country is preparing them rapidly for the adoption of some of the tried and proven legislation which has resulted in so much of good to all classes in that wonderful colony whose efforts for the common welfare have attracted world-wide attention.

We can afford to take a long step toward a goal which promises immunity from strikes and lockouts, the establishment of a minimum wage, the abolition of land monopoly, and relief from rapacious trusts.

Labor organizations in their highest and best attitude stand for this kind of legislation and reform, and the measures which will bring relief to them must of necessity afford the same blessings to all. If, therefore, there be attained some definite and stable relation between employer and employe whereby the vexatious and disturbing question of wages and hours will be regulated by wholesome laws, enforced by impartial and painstaking officials, the vast energy and power of organizations now engaged in a never-ending and hopeless struggle which involves bitterness, ill-feeling, and woeful waste to employe, employer and the public alike, will be directed into new channels for the common good, and a new era of "Peace on Earth, Good Will to Men," will be an accomplished fact.

CHILD LABOR.

Pursuant to the amendment to the constitution providing for the prohibition of child labor in underground mines and for legislation to enforce the same, which was adopted at the general election held in November, 1904, by a vote of 28,631 affirmative and 3,742 negative, the Ninth Legislative Assembly passed the following measure:

"Section 1. Any person, corporation, stock company, or association of persons, owning or operating any underground mine, or any officer, agent, foreman, or boss having the control or management of employes, or having the power to hire or discharge employes, who shall employ, or knowingly permit to be employed, any child under the age of sixteen years for work or service in any such mine, or the underground workings thereof, or permit or allow any such child to render or perform any work or service whatever in such mine, whether under contract of employment or otherwise, shall be guilty of a misdemeanor and punishable as hereinafter provided.

"Section 2. Any parent, guardian, or other person having the care, custody or control of any child under the age of sixteen years, who shall permit, suffer, or allow such child to work in any mine having underground workings, or who shall permit or allow any such child over whom they have such care, custody or control to retain employment in any such mine, or who, after having knowledge that any such child has taken employment in any such mine, or is performing work or service therein, whether under contract of employment or not, shall fail forthwith to notify the person or corporation operating such mine, or some officer, foreman or employe having the power to hire or discharge employes, of the age of such child, shall be guilty of a misdemeanor and punishable as hereinafter provided.

"Section 3. Any person or corporation violating any of the provisions of this Act shall be guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine not less than twenty-five ($25) dollars nor more than five hundred ($500) dollars, or by imprisonment in the county jail for a period of not less than thirty (30) days nor more than six (6) months, or by both such fine and imprisonment."

This act was approved and became of full force and effect February 15, 1905, but as yet has never been tested in any court. It seems, however, that it clearly and fully covers the situation and exemplifies the intent of the legislature of 1903, and the expressed wish of the people of the State as shown by their recorded votes. Aside from this specific law, there is absolutely no legislation upon this most important question. Fortunately, however, there is in the general public school laws, Chapter IV, Article XIV, Section 1921, Montana Code, some indirect safeguarding of the children of the State, and this law has at times been invoked in their behalf. The section reads:

"No child under fourteen years of age shall be employed or be in the employment of any person, company, or corporation during the school term and while the public schools are in session, unless such child shall present

to such person, company or corporation an age or schooling certificate herein provided for."

Violations of this section are punishable by a fine of not less than $25 nor more than $50 for each and every offense. But this and other sections of the same article apply only to the period of the school term, and during vacation there is nothing to prevent child labor in its most vicious forms.

From the vote upon the amendment to the constitution which excludes children from underground mines, there can be no doubt that a broad, comprehensive child labor law would meet with the hearty approval of a vast majority of the people of the State. While Montana has no child labor problem as it exists in other states, and some may urge that there is no need of such legislation, it is enough to say that at one time there was no child labor problem in the Carolinas, Georgia, Pennsylvania, New York, or Massachusetts.

The time for Montana to pass this legislation is now. To delay until the evil has insidiously fastened itself upon the industrial life of the State means a desperate struggle to uproot and destroy it. To continue with the present inadequate statutes is simply to invite the introduction of this monstrous system. New industries are needed and will come to the State, but they have a right to know the conditions and sentiment of the people upon this question, and should be informed in no uncertain terms that if they do come Montana will expect them to observe the present high standard of living, and to be able to compete and prosper upon the same terms as have all the other successful enterprises now in operation, with well paid adult labor.

In this connection there is another important matter that should receive immediate attention, namely, the registration of vital statistics. The operation of every child labor law in the United States has been sadly hampered if not rendered ridiculous by the absence of a strict and properly enforced registration of births, without which it is impossible to detect a false affidavit regarding the age of children. The statutes having made provision that it is unlawful for a child to work under a certain age should not leave it to the ignorance, cupidity, or necessity of parents to encompass one violation of law by committing another—that of perjury—but should maintain its own record of births, control its child labor, and enforce the laws upon that record. To accomplish this the registration of births and deaths should be accurate and universal, from this time on, and a record of the ages of all children now within the State should be compiled from the returns of the school census and filed with the proper officer. If this is done there can be no false swearing by parents, as the age certificate will be furnished by a State officer, from State records, precluding any opportunity of evasion or infraction of the law.

The time to do this is also now, when it can be accomplished without expense and with a minimum of labor.

This is building for the future, but it is both proper and important that these matters be no longer neglected. The shame and disgrace that have come to many of the older states by reason of their attitude toward what has been declared to be the greatest crime of civilization, should not be allowed to attach itself in even the slightest degree to Montana.

Every person should feel thankful that up to the present time there is no child labor problem here, which involves danger to health, life—society itself. At most there are a few very small children selling papers, and some older ones employed running elevators, acting as messengers, or in minor positions. But, in the absence of any law to the contrary, there is a growing disposition to employ children in this State, as the records of this office and the experience of the Humane Officer will absolutely prove.

The legislature is fortunately in a position to profit by the experience of many other states in preparing and enacting laws against child labor, and to know just what laws can and cannot be enforced.

It has been thoroughly demonstrated that a law forbidding the employment of children under a certain age, yet failing to establish official machinery for carrying out the provisions of the statute, is worse than useless, because it promotes lawlessness and contempt of government. It is known that if the law fails to provide for reliable proof of age of children seeking employment it is doomed to defeat, and by laying temptation in the path of the weak becomes a promoter of perjury. That if it forbids the night labor of children, yet provides no system of frequent night inspection for such industries as are operated at night, it becomes a dead letter. That if it forbids the employment but does not forbid the permission of children to work, it is ineffective, and that if it provides exemptions on account of poverty or infirmity in the home, a floodgate is opened to abuses which will work its undoing; while a law fairly complete in itself, unaccompanied by compulsory school attendance and requirements of mental and physical fitness, leaves the officer charged with enforcing the law helpless to perform the duties imposed upon him.

The Montana law can be made a model for all others to follow, if due attention be paid to the recorded success or failure of the different attempts at legislation upon this question.

SOME TROPHIES.

EMPLOYERS' LIABILITY LAW.

Undoubtedly the most beneficent and far-reaching law for the protection of the employe that has been enacted by the Congress for many years was what is generally known as the Employers' Liability Law, which was approved June 11, 1906. This act completely destroys the vicious common law construction of the fellow servant doctrine, and specifically recognizes a difference in the grades of employment among those working for an employer—the very heart of the fellow servant decisions.

The Montana legislature of 1905 also passed similar laws, but before entering into any analysis of these new statutes or endeavoring to familiarize the employes with their rights and benefits under them, they are printed in full. There can be no doubt, if these laws are permitted to stand, that the result so long sought for, viz., to compel employers to adopt measures that will curtail the present awful slaughter of human beings, will be obtained. The United States statute is as follows:

"An Act relating to the liability of common carriers in the District of Columbia and the Territories, and of common carriers engaged in commerce between the states, and between the states and foreign nations.

"Be it enacted by the Senate and House of Representatives of the United State of America in Congress assembled, That every common carrier engaged in trade or commerce in the District of Columbia, or in any territory of the United States, or between the several States, or between any Territory and another, or between any Territory or Territories and any State or States, or the District of Columbia, or with foreign nations, shall be liable to any of its employes, or in case of his death, to his personal representatives for the benefit of his widow and children, if any, if none, then for his parents, if none, then for his next of kin dependent upon him, for all damages which may result from the negligence of any of its officers, agents, or employes, or by reason of any defect or insufficiency due to its negligence in its cars, engines, appliances, machinery, track, roadbed, ways, or works.

"Sec. 2. That, in all actions hereafter brought against any common carrier to recover damages for personal injuries to an employe, or where such injuries have resulted in his death, the fact that the employe may have been guilty of contributory negligence shall not bar a recovery where his contributory negligence was slight and that of the employer was gross in comparison, but the damages shall be diminished by the jury in proportion to the amount of negligence attributable to such employe. All questions of negligence and contributory negligence shall be for the jury.

"Sec. 3. That no contract of employment, insurance, relief benefit, or indemnity for injury or death entered into by or on behalf of any employe, nor the acceptance of any such insurance, relief benefit or indemnity by the person entitled thereto shall constitute any bar or defense to any action brought to recover damages for personal injuries to or death of such employe: Pro-

vided, however, That upon the trial of such action against any common carrier the defendant may set off therein any sum it has contributed toward any such insurance, relief benefit, or indemnity that may have been paid to the injured employe, or, in case of his death, to his personal representative.

"Sec. 4. That no action shall be maintained under this Act, unless commenced within one year from the time the cause of action accrued.

"Sec. 5. That nothing in this Act shall be held to limit the duty of common carriers by railroads or impair the rights of their employes under the safety-appliance Act of March second, eighteen hundred and ninety-three, as amended April first, eighteen hundred and ninety-six, and March second, nineteen hundred and three.

"Approved June 11, 1906."

The two Montana statutes upon this subject read:

"An Act to determine the liability of persons or corporations operating railways or railroads in this State for damages sustained by employes thereof, and to declare void contracts restricting such liability.

"Be it enacted by the Legislative Assembly of the State of Montana:

"Section 1. Every person or corporation operating a railway or railroad in this State shall be liable for all damages sustained by any employe of such person or corporation in consequence of the neglect of any other employe or employes thereof, or by the mismanagement of any other employe or employes thereof, and in consequence of the wilful wrongs, whether of commission or omission, of any other employe or employer thereof when such neglect, mismanagement or wrongs are in any manner connected with the use and operation of any railway or railroad on or about which they shall be employed, and no contract which restricts such liability shall be legal or binding.

"Section 2. In case of the death of any such employe in consequence of any injury or damage so sustained, the right of action shall survive and may be prosecuted and maintained by his heirs or personal representatives.

"Section 3. All acts and parts of acts in conflict with this act are hereby repealed.

"Section 4. This Act shall be in full force and effect from and after its passage and approval by the Governor."

Approved January 16, 1905.

The second act is entitled:

"An Act to determine the liability of persons or corporations operating mines, smelters, or mills in this State for damages sustained by employes thereof, and to declare void contracts restricting liability.

"Be it enacted by the Legislative Assembly of the State of Montana:

"Section 1. That every company, corporation or individual operating any mine, smelter or mill for the refining of ores shall be liable for any damages sustained by any employes thereof within this State, without contributing negligence on his part, when such damage is caused by the negligence of any superintendent, foreman, shift boss, hoisting or other engineer, or crane men.

"Section 2. No contract of insurance, relief, benefit, or indemnity in case of injury or death, nor any other contract entered into before the injury, between the person injured and any of the employers named in this act, shall constitute any bar or defense to any cause of action brought under the provisions of this Act.

"Section 3. In case of the death of any such employes in consequence of any injury or damages so sustained, the right of action shall survive and may be prosecuted by his heirs or personal representatives.

"Section 4 All Acts and parts of Acts in conflict herewith are hereby repealed.

"Section 5. This Act shall take effect and be in full force from and after its passage and approval by the Governor."

Approved February 20, 1905.

For a proper understanding of the necessity of this apparent multiplicity of laws bearing upon one subject, a few general principles must be borne in mind. One of these is that the doctrine of "fellow servant" is not law at all, but simply court construction of common law. Under these decisions, all based upon that of Lord Abingdon in an English court in the case of two butcher boys riding on a cart in a London street, it has been universally held that no employer was liable for damages to an employe when such damages were the result of the incapacity, neglect, or carelessness of a fellow employe or servant, even if such damages were the result of the direct action of the representatives of the employer from the president or general manager of a company down. The rule was enforced in spite of the fact that a competent and careful employe has absolutely not a word to say about the employment of his fellow workman upon whose watchfulness and ability his life may depend.

Even when thoroughly cognizant that the incompetence or willful neglect of duty of a fellow employe amounts to criminality, the competent employe has positively no redress but to leave his employment.

Another point is that the common law decisions recognize no difference in the grade of employes. All are fellow servants from the highest to the lowest, and whether in discharge of their accustomed duties or not at the time of the accident, serve to establish the immunity of the employer. Actual instances are on record where accidents to workmen, resulting in death, have been caused by the deliberate act of a superintendent or general manager for the moment only assuming a position outside his usual and well defined duties, have been held to be caused by a fellow servant and the company exonerated.

Again, there are the cases of injury where the amount of damages sought to be recovered amount to $2,000 or more. All of these actions must be brought in the United States Court, where, of course, the United States statutes and rulings apply. The result is, that even though the state in which suit is brought has recognized the iniquity of the fellow servant doctrine, has passed laws establishing the liability of the employer, and would afford relief and commensurate damages to the employe or his family, the United States Court has been obliged to ignore these laws and, up to the present time, deny the complainants in the case the measure of justice the state laws would confer.

It is impossible to even estimate the suffering imposed upon helpless cripples and dependent families by this court construction of common law. Cases of recovery of damages in anything like compensatory degree for injuries or loss suffered are in infinitesimal proportion to severe and fatal accidents. The activity and chicanery of claim agents who practice upon the ignorance and helplessness of injured employes or sorrowing dependents is well known, as is the power and prestige of the great companies before the courts as against the usual complainant in such cases. Therefore, bearing all these things in mind, it is not too much to say that the action of Congress taken in conjunction with that of the Montana legislature, if upheld by the courts, means more to the working people of this State than any remedial legislation that has passed in many years.

THE EIGHT HOUR DAY.

On May 1, 1906, announcement was made in Butte, Anaconda and Great Falls that the eight hour day had been extended to include all classes of employes in and around the mills and smelters, such as blacksmiths, machinists, ropemen and electricians, who had hitherto worked nine hours. For five years the miners have had an actual working day of eight hours, but were hoisted and lowered on their own time. Under the new system the shifts will be lowered upon company time, which means half an hour each day to nearly 10,000 men.

The total number of men affected was about 6,000, whose working time was reduced from half an hour to an hour each day. This action, which was voluntary on the part of employers, would seem to firmly establish the principle of the eight-hour day in Montana, and presages its rapid extension to many other industries.

There has been no recent instance of a return to the long hour system where the shorter hours have been tried, nor even a disposition to do so. Both employer and employe seem to be thoroughly satisfied and to have adjusted themselves amicably to the new conditions.

A MONTANA EIGHT HOUR LAW DECISION.

The amendment to the State Constitution providing that eight hours shall be a day's labor on public works and in mills, smelters and underground mines, which was approved December 10, 1903, and adopted at the general election held November 8, 1904, by a vote of 29,237 for and 2,394 against, was made operative by legislative enactment of the Ninth Assembly in 1905.

To the great credit of nearly every prominent employer of labor in the State, it must be said that the spirit and letter of the law was complied with long before its passage. Indeed, the law brought few, if any, changes in the mills, smelters and mines, and it is safe to say that it is now being fully observed by all employers of this class of labor. In the East Helena smelter employes in the sampling works, believing that they were entitled to the benefits of the law in common with their fellow employes in other departments of this establishment, and in all other smelters in the State, struck on May 10, 1906, for the eight hour day. Their demand was speedily granted, and the most serious labor difficulty of the year was successfully averted.

The Cooke City smelter, in its trial run of eleven days, required its employes to work twelve hour shifts, but then was closed, and at present writing has not resumed operations. These are believed to be the only violations of the law in this particular.

Unfortunately, there was not the same general disposition to comply

with that part of the law relating to labor on public works, and many serious difficulties arose which culminated in a lower court decision that the law was defective and therefore unconstitutional. The case was that of the State against the Livingston Concrete Building and Manufacturing Company, and the charge was a violation of the law in requiring men to work nine hours at laying cement walks for the city of Livingston under contract with the company. Regarding the decision the judge said:

"There seems to be a misconception as to what was determined by the court in this case. An information was filed against the company, charging it with a violation of the Eight Hour law. A demurrer was sustained to the information on the ground that it did not state facts sufficient to constitute a cause of action in that the law which the company was charged with violating was void for uncertainty.

"The law of 1905 has but two sections, and from its language it is proper to inquire who should be guilty of its violation, the employer or the employe. Is it a violation of this law to work less than eight hours as well as a period greater than eight hours? The trouble with the law is that it fails to declare what acts shall constitute a violation of the constituional provision.

"It is evident that a section has been omitted from the Act declaring specifically the legislative intent. An examination of similar laws in fifteen or twenty states of the union, discloses the fact that the Montana Eight Hour law stands alone in its unique phraseology and the uncertainty of the legislative intent. A section something like the following should have been incorporated as section two of the Act:

" 'No person, corporation, stock company, or association of persons shall employ, permit or allow any person to work or labor on any undertaking carried on or aided by any municipal, county or state government or in mills and smelters for the treatment of ores, or in underground mines, for a period of more than eight hours in each twenty-four."

"This should be followed by what is now Section 2 of the Act, providing punishment for violations of the omitted section."

ARGUMENT BEFORE THE COURT.

An appeal was taken to the Supreme Court, and the case came up for hearing before that body on Nov. 14, 1906. The State was represented by Assistant Attorney General W. H. Poorman and the Honorable T. J. Walsh, whose argument before the court is herewith given:

No question can possibly arise as to the constitutionality of the statute upon which this proceeding is based.

Inquiry is foreclosed by the ruling of the Supreme Court of the United State in Atkin vs. Kansas, 191 U. S. 207, referred to in the brief of the learned attorney general, and by the more recent ruling of the same tribunal in Cantwell vs. State, 26 S. Ct., 749, (not yet officially published).

The Supreme Court of the United States decided in Holden vs. Hardy, 169 U. S. 366, that the Utah statute, limiting the hours of labor in underground mines and in mills and smelters was a valid exercise of legislative power, the decision being justified upon the ground that these were occupations more or less dangerous to health.

In the case of Atkin vs. Kansas, 191 U S. 207, a law of the State of Kansas.

limiting the hours of labor on works carried on by or under authority of the state or municipal subdivisions thereof was sustained on the ground that the state has the right to lay down the terms on which it or any of its subdivisions will contract. In Lockner vs. New York, 198 U. S. 45, a law of the State of New York was held unconstitutional limiting the hours of continuous employment of bakers, the court holding that the work of a baker was not dangerous to health. That it was not intended by this decision to recede in any measure from the position taken in Holden vs. Hardy is evident from the fact that when a statute of the State of Missouri, in all essential respects identical with that of the State of Utah, came before the court in Cantwell vs. State, supra, the decision of the Supreme Court of the State of Missouri, approving the act, was affirmed without any further opinion from the court.

The contention to the effect that a constitutional amendment identical with section 1 of the act under consideration never became effective, is entirely irrelevant. The statute in question does not depend for its validity upon any express power to legislate granted by the supposed amendment. The cases cited justify the act as within the power of the legislature, without regard to any provision such as became a part of the constitution by the amendment referred to. But the criticism made is clearly without merit. It is conceded that the Governor, in a special message to the legislature in extraordinary session, recommended to the legislature a measure submitting to the people the amendment. The contention that the word "or" in Section XI of Article VII of the Constitution should be read "and" is supported neither by reason nor authority.

It is understood, however, that the learned judge of the trial court sustained the demurrer to the information because, in his opinion, the language of the statute is not sufficiently accurate to denounce as criminal the acts charged against the defendant even if it be assumed that it was its purpose to do so.

This case presents simply the question as to whether section 2 of the eight-hour law, if not the entire act, is not void because of the inaccuracy of its language. Manifestly the court will not hold the act, nor any essential part of the act, nugatory because it is meaningless, unless it finds itself utterly unable to divine the purpose or intent of the legislature, or the language it used, by no fair construction of its terms, expresses the purpose or intent of the law-making body.

The provisions of statutes in relation to crimes must be construed according to the fair import of their terms. The construction should be such as to promote justice and effect the objects of the law, the limitation of this doctrine being that such enactments are not to be extended by mere construction to cases not embraced in their language. Enactments will not be held void except in cases of such inconsistency or repugnancy between the several parts and such inaccuracy of expression that the legislative intent cannot be ascertained with reasonable certainty. Hochheimer on Criminal Law, Sec. 28.

The rule that penal statutes are to be construed strictly has been abrogated, at least so far as the provisions of the Penal Code are concerned.

Section 4, Penal Code. The rule expressed by the Code is in consonance with the more modern doctrine which a recent work of high standing declares as follows:

"When the meaning of a statute is doubtful the reason and purpose of its enactment are to be taken into consideration in construing it, and determining the intention of the legislature. In other words, though a penal statute cannot be extended by construction, it should, if possible, receive such construction as, practically applied, will tend to suppress the evil which the legislature intended to prohibit." Clark & Marshall on Criminal Law, Secs. 97-98.

The inquiry, then, is whether "according to the fair import" of its terms, a contractor who works his employes on city work more than eight hours a day offends against Chapter 50 of the Laws of 1905. Section 1 of that act provides:

"A period of eight (8) hours shall constitute a day's work on all works or undertakings carried on or aided by any Municipal, County or State Government, and on all contracts let by them, and in mills and smelters for the treatment of ores, and in underground mines."

And then Section 2 declares that:

"Every person, corporation, stock company or association of persons who violate any of the provisions of Section One (1) of this Act shall be guilty of a misdemeanor, and upon conviction thereof shall be punished by fine of not less than One Hundred Dollars ($100) nor more than Five Hundred Dollars ($500), or by imprisonment in the county jail for not less than thirty days nor more than six months, or by both such fine and imprisonment."

It may be conceded that it would have been much more accurate, perhaps, to have said that "any person, corporation, stock company or association of persons that causes, suffers, permits or requires his or its servants or employes or persons under his or its direction to work in any such works or undertakings or places or under such contracts shall be guilty, etc." But that such is the significance of the language which was used cannot be doubted by anyone seeking to uphold rather than destroy the statute.

Section 2 made criminal the doing of something,—namely, offending against the provisions of Section 1 of the act. There is but one conceivable way in which Section I could be violated, namely, by one's working for more than eight hours in a mill, smelter, underground mine or on a work or undertaking carried on or aided by any municipal, county or state government, or on a contract let by it. In order that the offense be committed some one must have worked more than eight hours in a day. In the same way it is impossible to conceive of a violation of this injunction of the statute, except by the man who did the work, and by the "person (or persons), corporation, stock company, or association," who procured him to do it.

By its terms it is clear that the man who did the work has violated the statute. Whether he might escape under the contention that though he came within the letter he did not come within the spirit of the law need not be considered.

The history of this legislation may be resorted to in order to arrive at the meaning of the legislature.

Considering not only its history in this state, but regarding the sentiment that has given rise to similar legislation in other states, no doubt can take possession of the mind that it was intended to penalize the efforts of those who seek to keep laborers at such employments for more than eight hours. Efforts have been made to induce laborers who did not yield readily to the sentiment prevalent among those who work for wages for an eight-hour day to recognize the propriety of thus limiting the hours of labor, but not always with success. Possibly it was intended by this law to force observance by those disposed, either by inclination or spirit of acquiescence in the wishes of the employer, to work beyond the limit fixed by the statute, by visiting upon them as well its pains and penalties.

But the statute was intended either to punish the employer or the employe or both. In its terms it probably denounces the act of one who works in his own mine, mill or smelter more than eight hours in a day, or a contractor upon a public work who does so. But that question is not presented here.

If the history of the legislation is considered it cannot be doubted that the statute was intended to reach the employer anyway, however, it may have been as to the employee. The language of the statute clearly points to the same conclusion. It not only makes every person violating Section 1 of the act answerable, but every corporation. A corporation cannot do a "day's work." It is inconceivable how it could offend against the statute except by having its servants labor for more than eight hours in a day.

It must be, therefore, that it is procuring, inducing, hiring, requiring, permitting employes to work more than eight hours that constitutes the violation of Section 1 that is made criminal by Section 2 of the act.

But let it be assumed that the law does not in terms do more than make a criminal of the man who does the work; that it does not by its express terms make criminal the act of the man who gets him to do the work. Still the indictment in this case is good and the demurrer should have been overruled.

We will assume that the statute in no ambiguous terms declared it criminal for a man to work more than eight hours a day. The information charges that the defendant "did then and there unlawfully and willfully cause, suffer and permit its servants and employes * * * to work for a longer period than eight hours per day, etc." If it is a crime for one to work more than eight hours a day, it is equally a crime for one to cause him to do so.

Section 41 of the Penal Code provides that:

"All persons concerned in the commission of a crime, whether it be a felony or a misdemeanor, and whether they directly commit the act constituting the offense, or aid or abet in its commission, or not being present, have advised and encouraged its commission * * * are principals in any crime so committed."

If the law did nothing more, by its terms, than to declare it a crime to work more than eight hours a day, it would unquestionably be a crime to hire one to work more than eight hours, or to enter into any agreement with him, express or implied, that he should work more than that period per day, if, in fact, pursuant to such contract of hiring he did work for a period longer than that prescribed by the statute. Laws making it penal to labor on Sunday, except in the doing of work of charity or necessity, are very common in this country. The man who does the work incurs the pains and penalties of those laws. But unquestionably under a statute similar to our Section 41 of the Penal Code, or even under the common law, as the offense is declared a misdemeanor, one who hired him to work on Sunday would become equally guilty. Certainly he would if he caused the man to violate the statute. Com. vs. Dale, 11 N. E. 534.

To sum up. The law says that "every person, corporation, stock company, who violates any of the provisions of Section 1 of this act is guilty of a misdemeanor." Either the act makes those guilty who work more than eight hours, or those who hire or cause them to work more than eight hours, or it makes both classes guilty.

If it makes both classes guilty, then the demurrer should have been overruled. If it makes those who hire or cause men to work more than eight hours guilty, then the demurrer should have been overruled. If it makes those guilty who work more than eight hours, then the demurrer should have been overruled, applying the principle of Section 41, Penal Code.

If criticism simply for the sake of criticism were indulged in, it might be said that the law does not make working more than eight hours a day, or hiring men to do so, criminal any more than working or hiring men to work less than eight hours. But a fundamental rule to be regarded in the construction of statutes, quoted above, is that the court must consider the evil which the legislature intended to prohibit. It is continuing employes at work for periods of such length as to imperil their health and strength, physical, intellectual, or spiritual, or otherwise to become a menace to the public that is the evil to be reached and remedied by these statutes. An application of this rule leaves no doubt that it was the continuance of work for more, not less, than eight hours that the legislature intended to prohibit and did prohibit by this statute.

Besides an act should be construed so as that it must be held constitutional and valid rather than unconstitutional and void. In other words, such a construction must be given to an act that it may be sustained as within the constitutional power of the legislature, and not beyond it. It must be presumed that the legislature intended to pass an act which it had the right to pass, and not one which was without its constitutional powers. That the legislature could not within its constitutional powers pass a law punishing a man who worked less than eight hours in a day cannot be disputed. The matter is not open to argument even. Accordingly, the court is bound to consider that it was not the purpose of the legislature, in the enactment of legislation under consideration, to make it criminal to work less than eight hours.

And it is equally free from doubt that whether the legislature intended to do what it did, make the man a criminal who works more than eight hours, the purpose was to make criminal the act of the person, corporation, association or stock company that

hired or caused him to do so. And that the language, even though it be admitted to be in some measure ambiguous, is not inapt to express that purpose, we may fairly conclude from the fact that in very similar terms other legislatures have sought to express a similar intent and purpose.

Our statute is very similar in its language to a recent statute of the State of Colorado. (Session Laws of Colorado, 1905, page 284.)

Even Massachusetts, in whose enactments we have been led to look for pure English accurately expressing the idea to be conveyed, finds the form used by our legislature to meet the requirements of the case, its statute using much the same language. (Acts and Resolves of Mass., 1906, page 728.)

In re Broad, 78 Pac. 1004, there was before the Supreme Court of Washington an ordinance of a city of that state which provided by Section 1 that "Hereafter eight hours in any calendar day shall constitute a day's work on any work done for the City of Spokane, subject to the conditions hereinafter provided."

And by Section 4 that "Any contractor, subcontractor, or agent of contractor, foreman or employer, who shall violate the provisions of this ordinance shall be deemed guilty of a misdemeanor."

A contractor was convicted under an information which charged that he "did then and there unlawfully and wilfully permit one Martin Devereux to work and labor more than eight hours in one calendar day, etc." Though the constitutionality of the statute was attacked it was apparently not considered as doubtful that the act charged was prohibited by the statute.

On the other hand, statutes may be found in which, apparently, a greater degree of care was taken to define just what constituted a violation and who were amenable. (See Laws of Missouri, 1905, page 236; Laws of New York, 1906, Vol. 2, page 1,362; Laws of Pennsylvania, 1905, page 252.)

And yet it is not to be believed that the laws last above referred to evince a policy in any essential respect different from that exhibited in those first classified.

A Missouri statute provided that every electric street car should, during certain months, "be provided * * * with a screen" to protect the motorman. A later section declared that "any person, agent or officer of any association or corporation violating any of the provisions of this act shall be deemed guilty of a misdemeanor, etc."

It was held that this language was sufficiently accurate to justify a conviction of any person who owned or operated street cars who should operate one during the months named in the act without a screen. And the court held that the statute being remedial as well as penal should be fairly construed. (State vs. Whitaker, 60 S. W. 1068.)

The defendant has no good ground for assertion that the act charged against him is not denounced by the statute.

THE COURT'S DECISION.

On Thursday, December 13, 1906, the following unanimous decision upholding the constitutionality of the law was handed down by the Supreme Court, Mr. Justice Holloway delivering the opinion of the Court:

The Livingston Concrete Building and Maufacturing Company, a domestic corporation was charged by an information filed in the district court of Park County, with violating the provisions of Chapter 50, Laws of 1905, known as the "Eight Hour Law," in this: that the defendant, having a contract with the city of Livingston for the construction of certain cement sidewalks, crosswalks and curbs, did unlawfully and willfully cause, suffer and permit its servants and employes engaged in such work, to work for a longer period than eight hours in a day. To this information the defendant interposed a general demurrer, which was sustained. The state appeals from the

judgment for the defendant on the demurrer to the information.

The information states facts sufficient to constitute a public offense, if Chapter 50 above is a valid legislative enactment capable of being enforced. But on behalf of respondent it is urged: (1) that the Act is so indefinite as to be incapable of enforcement, and (2), that, even if sufficiently definite, the Act is unconstitutional and void.

The provisions of Chapter 50, above, are as follows: "Section 1. A period of eight (8) hours shall constitute a day's work on all works or undertakings carried on or aided by any Municipal, County or State Government, and on all contracts let by them, and in mills and smelters for the treatment of ores, and in underground mines.

"Section 2. Every person, corporation, stock company or association of persons who violate any of the provisions of Section One (1) of this Act shall be guilty of a misdemeanor, and upon conviction thereof shall be punished by fine of not less than One Hundred Dollars ($100) nor more than Five Hundred Dollars ($500), or imprisonment in the county jail for not less than thirty days nor more than six months, or by both such fine and imprisonment."

It is said that the statute is too indefinite to be enforcible, in that (1) it cannot be determined whether it intends to impose the penalty prescribed upon the man who works less than eight hours in a day, or upon the man who works more than eight hours in a day or upon both; (2) it cannot be determined whether it is intended to punish the employer, the employe, or both; and (3) it is so indefinite that in fact it cannot be said to forbid the employment of a laborer for more than eight hours in a day.

While it may be conceded that the intention of the lawmakers might have been expressed in plainer terms, we cannot hold a solemn legislative enactment of no force or effect because of the indefinite language in which it is couched, unless we find ourselves unable to divine the purpose or intent of the legislature. (Hochheimer Criminal Law, 2d Ed. sec. 28.) For, after all, the function of the court is to determine and make known, if possible, such purpose or intent, for the intention of the legislature is the essence of the law. In Edwards v. Morton, 92 Tex. 152, 46 S. W. 792, it is said: "The intention of the legislature in enacting a law is the law itself, and must be enforced when ascertained." In Manhattan Co. v. Kaldenberg, 165 N. Y. 1, 58 N. E. 790, it is said: "In construing statutes the proper course is to start out and follow the true intent of the legislature, and to adopt that sense which harmonizes best with the context, and promotes in the fullest manner the apparent policy and objects of the legislature." (2 Lewis Sutherland on Statutory Construction, 2d ed., sec. 363.)

It is an elementary rule that effect must be given to a statute, if possible. If the statute is plain and unambiguous so that no doubt can arise from the language employed as to its scope and meaning, then there is not any room for interpretation or construction, and the reading of the statute itself is a sufficient declaration of its meaning. "When the meaning of a statute is doubtful, the reason and purpose of its enactment are to be taken into consideration in construing it, and determining the intention of the legislature. In other words, though a penal statute cannot be extended by construction, it

should, if possible, receive such a construction as, when practically applied, will tend to suppress the evil which the legislature intended to prohibit." (Clark & Marshall on the Law of Crimes, p. 97; 2 Lewis Sutherland on Statutory Construction, 2d ed., sec. 528, 530.)

The history of labor legislation makes clear the evil to suppress which such statutes are enacted. It is the continuous employment of workingmen for such length of time as to imperil their lives or health that is sought to be avoided, and, in the interest of the general welfare of its citizens, the state undertakes to correct the evil as far as it may; or it may have been the purpose of the state to stamp with its approval the view now entertained by many, that, all things considered, the general welfare of workingmen upon whom rests a portion of the burdens of government, will be best subserved if labor performed for eight hours continuously be taken as the measure of a full day's work; that the restriction of a day's work to that number of hours will so far promote the morality and improve the physical and intellectual condition of workingmen as to enable them the better to discharge the duties of citizenship.

With these objects in view, it cannot be supposed that the legislature intended to impose punishment upon every laborer engaged in any of the designated employments who fails to work for the full period of eight hours in every working day. But, on the other hand, it is apparent that the object and purpose in view were to prevent the employment of a laborer in any of such employments for more than eight hours in a day, that number of hours of continuous labor being fixed by the statute as the maximum for a day's work.

As it is the purpose of the statute to conserve the health and promote the happiness of the workingman—not to curtail his capacity to earn money or to set bounds upon the greed of his employer—the statute is written in terms broad enough to include within its inhibition both the employer and the employe. The language is: "Every person, corporation, stock company or association of persons who violates any of the provision of section one of this Act shall be guilty of a misdemeanor," etc.

In Short v. Bullion-Beck C. M. Co., 20 Utah 20, 57 Pac. 720, a similar statute of the state of Utah was considered, and it was there held that the statute applies both to the employer and employe, and that the protection which the state throws around the citizen by the enactment of such a law cannot be waived even by the employe, the person for whose benefit the statute is primarily enacted. We do not think that in this respect the statute is at all indefinite, but, on the contrary, the meaning of the language employed seems to be plain.

It is said that the statute does not in terms prohibit the workingman from engaging in any of the designated employments for more than eight hours in a day, nor does it specifically prohibit the employer from hiring him to do so, and that, in fact, at most, the statute does not do more than define a working day. But the courts have not had difficulty in reaching an altogether different conclusion. The statute of Utah considered in Short v. Bul-

lion-Beck C. M. Co., above, provides in section 1 that the period of employment of workingmen in underground mines shall be eight hours per day. In section 2 the same language is employed with respect to mills and smelters for the treatment of ores. Section 3 provides: "Any person, body corporate, agent, manager or employer who shall violate any of the provisions of sections 1 and 2 of this Act, shall be deemed guilty of a misdemeanor," etc. Respecting this statute the court said: "When the plaintiff (employe) voluntarily performed services at the request of the defendant (employer) in the mill, and worked twelve hours instead of eight hours, there was a violation of the statute. * * * When the defendant (employer) requested the plaintiff to work twelve hours each day, and plaintiff complied with that request, the law was violated by the act of each party."

In State v. Whitaker, 160 Mo. 59, 60 S. W. 1068, the supreme court of Missouri had under consideration a statute which requires that every electric street car, other than trail cars which are attached to motor cars, shall be provided during certain months of each year with a suitable screen which shall fully and completely protect the driver, motorman, gripman or other person guiding or directing the car, from wind and storm. The penalty clause is as follows: "Any person, agent or officer of any association or corporation violating any of the provisions of this Act shall be deemed guilty of a misdemeanor," etc. The court held that this statute is not so indefinite or uncertain in its meaning as to be inoperative, but that it imposes upon every company or association of persons operating electric cars the duty of providing the screens on their cars, and makes subject to the penalty prescribed any person who, owning or operating such cars, operates them without screens during the designated months of the year.

The declared purpose of our statute is to impose a penalty upon every one who violates the provisions of section 1 of the act. And how may those provisions be violated? Manifestly in no other way than by the employe working more than eight hours in a day in any of the designated employments, or by the employer causing him to do so. The information in this case charges that the defendant company did unlawfully and wilfully cause, suffer and permit its servants to work for a longer period than eight hours in a day, and if this be true, there was a clear violation of the statute by the defendant company; and it was no less a crime that its servants might also be equally guilty of the same offense.

In this connection it is said that the statute is exceedingly harsh and arbitrary in that it limits the number of hours of labor even though the employe is working by the hour and paid according to the number of hours he works. But when the purpose of the law is kept in mind, we think this criticism cannot be made. The object of the law is to conserve the health and promote the happiness of the workingman by such reasonable regulations as will save them in the one instance from overwork, and in the other afford them ample time for rest, recreation and their physical and mental improvement; and, therefore, it is quite immaterial whether the labor is performed by the day or by the hour. Its object is to limit the number of hours of labor in a day so

far as the state may do so. The same criticism might be made of many other public statutes. Every law is a restraint upon some one, and the question of its harshness is only a relative one, depending largely upon the disposition of the person restrained, or the character of the business in which he is engaged.

It is further urged that the statute is harsh in that no provision is made for cases of emergency where life or property is in peril; and it may be conceded that the Act would be more consonant with our ideas of a reasonable regulation if provisions had been made for such emergencies. But neither of these criticisms affects the validity of the Act. If it was the legislative will, that no exception be made to the rule announced, the courts cannot say that a different policy should have been pursued. In fact, these objections only raise the question of legislative policy, with which the courts have nothing to do, unless it should be made to appear that in its operation the Act would be so unreasonable that it could not be supposed that the Legislature ever intended it to have such effect. (20 Enc. Law, 2d ed., 599.) Whether this statute in its operation will in fact prove to be harsh, can only be determined by experience, and a probability that it will do so is not sufficient to condemn the Act in advance.

We are not called upon in this connection to decide whether or not in the event a workingman had practically completed his eight hours of work upon one of the designated employments, and some emergency should suddenly arise whereby life or property was placed in imminent danger, such employe might not prolong his labor beyond the allotted time without violating the spirit of this statute. That question is not presented in this case and it is therefore not considered nor decided.

In prefacing his brief, counsel for respondent insists that the amendment to the Constitution of Montana, prescribing the hours of labor in works or undertakings carried on or aided by any municipal, county or the state government and on contracts let by them, and in mills and smelters for the treatment of ores, and in underground mines, approved by popular vote at the general election of 1904, was not properly submitted to the people and therefore was not properly adopted. And while we do not agree with counsel in this contention, we do say that it is entirely immaterial whether we have such amendment in effect or not, for this question involves the construction of our statute with reference to the Fourteenth Amendment to the Constitution of the United States; and if our statute violates such Fourteenth Amendment, it would not aid it if we had a constiutional provision authorizing it, for in that event our constitutional provision would have to give way to the paramount authority of the Constitution of the United States.

But inquiry as to the constitutionality of this statute ought to be deemed foreclosed, for every feature of it has been before the Supreme Court of the United States and passed upon by that tribunal. Treated from a purely technical standpoint, the statute embraces two classes of employes: (1) those engaged in works and undertakings carried on or aided by any munici-

pal, county, or the state government, or on contracts let by them; and (2) those engaged in mills or smelters for the treatment of ores, or in underground mines. A case involving a statute applying to an employe of the first class arose in Kansas, where they have a statute similar to our own so far as applicable to that class of employes and in so far as it raises the question now under consideration. One Atkin had a contract with Kansas City, Kansas, to provide the labor and materials and construct a brick pavement upon Quindaro Boulevard, a public street of that city, and as such contractor required one of his employes to work for ten hours per day in prosecuting such work. Atkin was charged with violating the Kansas eight-hour law, was convicted, the judgment affirmed by the supreme court of Kansas (State v. Atkin, 64 Kan. 174, 67 Pac. 519), and by writ of error the case was taken to the supreme court of the United States, where every objection to the constitutionality of the Kansas statute was urged which is urged here.

Counsel for plaintiff in error in the Atkin case argued: (1) That the statute of Kansas abridges the privileges of a citizen of the United States and curtails his liberty with respect to his right to contract with the state or any of its subdivisions; (2) that the construction of the sidewalk in controversy was purely a local affair, with which the state has no concern; (3) that the statute denied to Atkin the equal protection of the laws; and (4) that it was conceded that the work was not dangerous to life, limb or health, and that daily labor on it for ten hours would not be injurious to the laborer in any way, and therefore the statute could not be upheld as a police regulation. With respect to the first of these contentions, the court said:

"If it be contended to be the right of every one to dispose of his labor upon such terms as he deems best—as undoubtedly it is—and that to make it a criminal offense for a contractor for public work to permit or require his employe to perform labor upon that work in excess of eight hours each day, is in derogation of the liberty both of employes and employer, it is sufficient to answer that no employe is entitled, of absolute right and as a part of his liberty, to perform labor for the state; and no contractor for public work can excuse a violation of his agreement with the state by doing that which the statute under which he proceeds distinctly and lawfully forbids him to do.

Counsel for respondent in this case cited Cleveland v. Clements Bros. Construction Co., 67 Oh. St. 197, 65 N. E. 885, and People v. Coler, 166 N. Y. 1, in support of the second contention above, which is also urged here. But these cases and several others were cited by counsel for plaintiff in error in the Atkin case upon the same question, but without avail, and respecting that second contention the court said: "Such corporations are the creatures, mere political subdivisions, of the state for the purpose of exercising a part of its powers. They may exert only such powers as are expressly granted to them, or such as may be necessarily implied from those granted. What they lawfully do of a public character is done under the sanction of the state. They are, in every essential sense, only auxiliaries of the state for the purposes of local government. * * * The improvement of the boulevard in question was a work of which the state, if it had deemed it proper to do,

THE LOWER YELLOWSTONE GOVERNMENT DITCH.

could have taken immediate charge of by its own agents; for it is one of the functions of government to provide public highways for the convenience and comfort of the people. Instead of undertaking that work directly, the state invested one of its governmental agencies with power to care for it. Whether done by the state directly or by one of its instrumentalities, the work was of a public, not private character." (In Re O'Brien, 29 Mont. 530, 75 Pac. 196; Wilcox v. Deer Lodge, 2 Mont. 574.)

The supreme court further said: "Equally without any foundation upon which to rest is the proposition that the Kansas statute denied to the defendant or to his employe the equal protection of the laws. The rule of conduct prescribed by it applies alike to all who contract to do work on behalf either of the state or of its municipal subdivisions, and alike to all employed to perform labor on such work."

With respect to the fourth contention the court said: "Some stress is laid on the fact, stipulated by the parties for the purposes of this case, that the work performed by defendant's employe is not dangerous to life, limb or health, and that daily labor on it for ten hours would not be injurious to him in any way. In the view we take of this case, such considerations are not controlling. We rest our decision upon the broad ground that the work being of a public character, absolutely under the control of the state and its municipal agents acting by its authority, it is for the state to prescribe the conditions under which it will permit work of that kind to be done. Its action touching such a matter is final so long as it does not, by its regulations, infringe the personal rights of others; and that has not been done."

The court disposed of the controversy by saying that the statute of Kansas is not inconsistent with the Constitution of the United States, and that "indeed, its constitutionality is beyond all question." (Atkin v. Kansas, 191 U. S. 207.) The decision in the Atkin case is conclusive upon this court and decisive of the question presented here.

So far as the statute affects the other class, that is, workingmen employed in mills and smelters for the treatment of ores, and in underground mines, its constitutionality is settled beyond controversy. (Holden v. Hardy, 169 U. S. 366; Cantwell v. Missouri, 26 Sup. Ct. Rep. 749.)

Finally, counsel for respondent says: "If the legislature has the power to deprive cities and their contractors of the right to agree with their workingmen upon the hours of labor or compensation, it has the same right and power to legislate in respect to private persons." But that this contenion is erroneous must be deemed settled. In Lochner v. New York, 198 U. S. 45, the supreme court of the United States declared the general rule to be that the right of persons, engaged in private business, to make contracts in relation to such business, is a part of the liberty of such persons, and is protected by the Fourteenth Amendment to the Constitution of the United States; and that this right includes the right to contract for labor, except where controlled by the state in the exercise of its police power

So that the three cases, Holden v. Hardy, Atkin v. Kansas, and Lochner v. New York, seem to cover almost every possible feature of labor legisla-

tion, except that relating to the employment of women or children, and they determine once for all (1) that with respect to work carried on or aided by any municipal, county or state government, or on contracts let by them, or in private work of such character as to imperil the health or lives of the workingmen—as, for instance, work in mills or smelters for the treatment or ores and in underground mines—the state may prescribe reasonable rules regulating the hours of labor and the conditions under which such work shall be done; (2) with respect to contracts relating to other classes of private work (except where women or children are employed), the state may not interfere.

In the judgment of this court, Chapter 50 of the Laws of 1905, is a valid legislative enactment, capable of being enforced. Under this view of the case, we are of the opinion that the information states a public offense.

The judgment of the district court is reversed and the cause is remanded with direction to vacate the judgment rendered and the order made allowing the demurrer, and to overrule the demurrer to the information.

Reversed and remanded.

(Signed) WM. L. HOLLOWAY,
Associate Justice..

We concur:
THEO. BRANTLY, Chief Justice.
GEO. R. MILBURN, Associate Justice.

FORT BENTON, BUILT IN 1846.

HOURS OF RAILWAY EMPLOYES.

This very important matter was made the subject of both state and national legislation during the winter of 1906-7. In so far as the general public is the traveling public every inhabitant of this great country has a personal interest in the number of hours which are required from this class of employes. Upon this subject the last report of the Interstate Commerce Commission says:

"Another important feature of railroad operation is the hours of labor of railroad employes, especially of enginemen, conductors and other trainmen, telegraph operators and signalmen. All of these men are charged with delicate and responsible duties, and they should never be on duty except when in good physical and mental condition.

"The need of a high standard in this respect and of care on the part of supervisory officers to see that proper regulations are maintained and obeyed, is quite generally recognized, and a considerable number of railroads have prescribed rules limiting the hours of work and providing suitable rest periods; but these rules appear to be very poorly enforced. Evidence of overwork is frequently found in the accident reports. Besides those cases of men remaining on duty because of wrecks or snowstorms or other emergencies, there is much irregularity in the every-day train service. The disposition of men to work beyond reasonable limits of physical endurance for the sake of facilitating the business of the railroad, or to increase their own earnings, may be seen in other departments than the train service. Signalmen, who usually work regular turns of twelve hours each, sometimes take each other's places in case of sickness or an unexpected call of a man away from his home, and thus remain on duty thirty-six hours at a time.

"This defect in the service, due to overwork, is frequently discovered in conjunction with a deficiency of another sort—inexperience. Men who have been but a few months in the service, and who have yet much to learn concerning some features of their duties, should be required to comply with the rest-time regulation with the most scrupulous care; yet it often happens, as has been shown in the accident reports, that new men, admittedly less competent for their duties on that account, are the very ones who have been put to the additional test of working over hours."

The hours of service in a day that a railway operative may be required or permitted to work should be strictly limited by law, under severe penalties. No question of extra hazard enters into this phase of railroading. It is, in nearly every case, a mere question of greed. If this trait becomes evident in the employe, who for the extra compensation to be derived from overtime is willing to force himself into a condition which endangers his fellow employes and the traveling public, the law may rightly step in and apply a corrective. On the other hand, if the company exacts from an employe such continuous attention to duty as will preclude the very best service of which the employe

is capable, or persistently practices a system of overtime and long hours that materially affects the safety of every passenger who may use its lines, it is equally the duty of the law to protect and safeguard the public. Unduly protracted periods of continuous service has become a fruitful and frightful source of railway disasters in this State. Coincidently with the vast increase in traffic, disasters from this cause justly arouse public indignation.

Not all are prepared to say that the time has come when the block system should be generally installed, or the transcontinental lines should be double tracked. But all will agree that to entrust human lives to the keeping of men who have been on duty so long that nature rebels at further service, is a character of culpability that the law should denounce and punish, and that when such service is exacted at times when no evtraordinary emergency demands it, and is followed by a fatal accident, there should be no hesitancy in styling such practices as criminal.

Hundreds of instances might be cited where train crews have been compelled to be on duty continuously for periods varying from 14 hours to 53 hours, without resulting accident But these simply prove the inhumanity of the system. Take a few specific cases where fatalities have resulted.

In the spring of 1906 a passenger train was wrecked near Helena and six persons lost their lives, some of them in a manner too horrible to detail. The train was struck by runaway freight cars which escaped from the sidetrack at Austin at the foot of the divide, and the coroner's jury found that this runaway was due, in part, to the fact that the crew of the freight were worn out by over fourteen hours of continuous service

A recent investigation in a court disclosed that an engineer and fireman, getting into their terminal at 2 a. m. after a day's service, were called to go out at 7 a. m. of the same day. Some time after 4 p. m. the boiler of the locomotive exploded because of low water, it was said, killing the engineer and horribly maiming the fireman. A student fireman with the crew also suffered serious injury. The pay of the engineer for the month preceding his death amounted to $175. Had he worked regularly from 10 to 12 hours a day, and no overtime, he would have earned from $125 to $135.

Not even the block system in use between Missoula and Evaro availed to obviate a head-on collision occurring recently, the engineer on one of the colliding trains having been on duty without sleep, incredible as the statement may appear, for forty-four consecutive hours.

A few years since a collision occurred at Bearmouth because an operator at Bonita slept at his post. An engineer and a head brakeman were killed, and a fireman scalded so horribly as to make the details sickening. The operator, having been on duty from 7 p. m. until 7 a. m., relieved the day man at 4 p. m., the latter being excused until noon of the day following. After a night shift of 12 hours, and having had 9 hours' intermission in which to sleep and eat two meals, he took a shift which might last 20 hours and was sure to extend beyond 16. At 11 o'clock at night he went to sleep, but awakened in time to answer an inquiry as to whether a certain train had gone by.

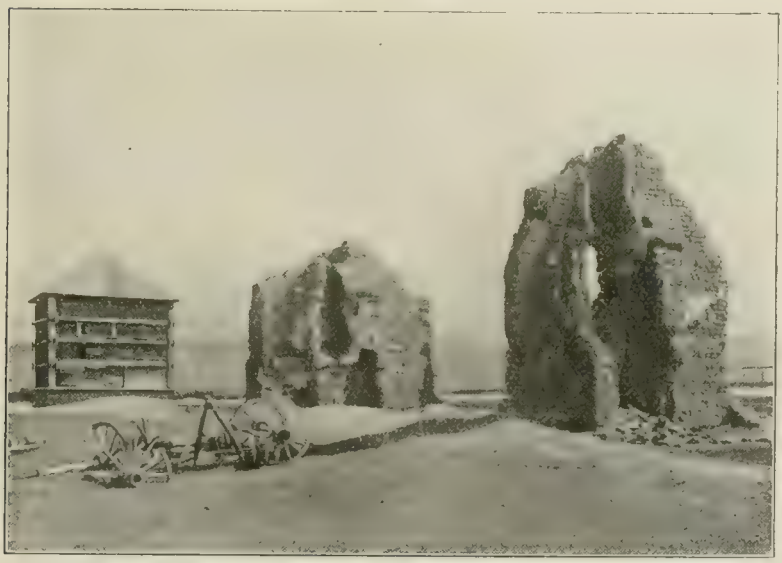
He replied that it had not and took a meet order for it. The train had, in fact, passed while he slept, and the collision resulted. He was virtuously discharged, of course, and died shortly afterward. It was said that his malady was heightened by his remorse at his fatal physical and moral weakness on the occasion of the accident. There is no necessity for extending this recital. The facts are well and commonly known, and cry aloud for redress.

The following rules should be embodied in the law and placed upon the statute books at the earliest possible moment:

"No train employe may be required nor permitted to be on duty for a longer period than 12 consecutive hours nor to be on duty for more than 14 out of 24 hours, and every train employe must be relieved of duty for a period of at least 8 consecutive hours out of every 24 hours.

"No employe having the right to govern trains by telegraph, or who, as operator, sends or receives messages giving train orders, may be permitted to be on duty for more than 8 consecutive hours, nor for more than 12 in any 24 hours."

In addition the law ought to provide that in case of action to recover damages for death or injury arising in consequence of its violation, the employe should not be deemed to have accepted the risk because he continued in the service beyond the statutory time.



PRESENT REMNANTS OF OLD FORT AT FORT BENTON.

ENFORCEMENT OF LABOR LAWS.

A law of this character is an absolute necessity in Montana, but it should not be passed under any misunderstanding. Unless it is made the specific duty of some official to see that the provisions of the law are enforced, and power and authority are conferred upon such official to make his findings and recommendations obligatory upon the employers under suitable penalties, it is useless to place the law upon the statute books. Laws cannot be made with automatic attachments by which they enforce themselves. Montana has some of the very best reform and labor laws ever passed in any community that are as obsolete as the Puritan "Blue Laws," because this most important feature was omitted.

The exceptions to this rule are very limited, being confined to some of the more recent legislation relating to inspection of mines, and the State Humane officers. Examples of the other class of laws are the Board of Arbitration, inoperative for many years; the Company Store bill; the Eight Hour law on Public Works; the Apprentice law; the law against blacklisting; the Typographical Union Label law, and others.

The results sought for may perhaps be more easily accomplished by an amendment to the law defining the duties of the Commissioner of this Bureau than in any other way. The following section would serve the purpose admirably:

"It shall be the duty of such officer (Commissioner) to cause to be enforced all laws regulating the employment of children, minors, and women; all laws established for the protection of the health, lives and limbs of operatives in workshops, factories, mills, and other places except underground mines, and all laws for the protection of the working classes now in force or hereafter to be enacted."

"In its biennial report the bureau shall give an account of all the proceedings which have been taken in accordance with the provisions of this act, herein referred to, including a statement of all violations of law which have been observed and the proceedings under the same.

"The Commissioner shall have power to order any alterations that may be necessary for the proper protection of employes, and to condemn any defective machinery or such as is not supplied with proper safety appliances, that may be shown to be dangerous to life and limb. Failure to comply with the orders of the Commissioner in this regard shall subject the proprietors of the establishment in which such conditions exist to a fine of $50 a day for each day such orders are not complied with after the date set by the Commissioner on which the changes are to be made."

Such an amendment as this would at once galvanize into life all existing statutes that pretend to favor the working classes, but are now practically worthless. It would have prevented the strike at the East Helena smelter,

and the violation of the Eight Hour law in the new smelter at Cooke City. It would have assisted in the prosecution of the various suits against cities and contractors who have been and are continually violating the provisions of the Eight Hour law on public works. It would prevent the loss of life and limb from exposed and defective machinery, and it would make the Bureau of Labor the power for good that it was expected to be, and which similar institutions have been in other states. It would prevent the introduction and extension of child labor, that curse of all curses, in the great State of Montana; it would check and uncover the importation of laborers into the State under contract, a practice much more common than is generally believed.

All these and many more salutary and necessary things could be brought about, without the passage of a new law or without working a hardship on any employer if this amendment could be secured. The time to take such precautionary measures is now, before any great industrial development has taken place, without waiting for the united and serious opposition of enormous capitalistic enterprises. There are many of these who are willing to take advantage of existing conditions, and these will most certainly make strenuous objection to such remedial legislation in future years. Montana should take time by the forelock and not delay action until petty evasions of law have become notorious and flagrant violations, resulting in an unbearable condition that cannot be changed without a heartbreaking struggle.

"LOCATED"—VALLEY COUNTY

WAGES.

In conformity with the increased cost of living, wages in Montana have advanced during 1905 and 1906. It is much to be regretted that lack of necessary funds to establish and maintain a systematic record of the ratio of these variations are not available, which renders it impossible to more than generalize upon this most important subject. Montana has always been a high wage State, and consequently the cost of living has also been high. Of course, if prices of commodities in early days, when freighting by team was the only means of transportation, be compared with price lists of today an enormous reduction will be noticed, and as this is not a great many years ago there remains but a comparatively short period from which conclusions may be drawn. It is for this very reason that data of present conditions should be prepared, as they would furnish a reliable basis for future comparisons. Again, it should be borne in mind that a great part of the labor in this State is now done under the short hour system, which has its effect upon wages. It would also be most interesting to note the duration, causes, and effect of the flood tide of high wages at present in vogue, but aside from mentioning the facts this must be omitted. There seems to be little doubt that, except in cases where machinery is operated for the full twenty-four hours, necessitating three shifts where but two were formerly engaged, the eight hour day has been responsible for the employment of fewer new men than was expected. Shorter hours and better wages have not only attracted the very best class of workmen, but it has stimulated per capita production to the extent of making the gross output equal or even exceed that under the former system.

Many of the advances in the wage scales have been among that class of employes whose occupations do not readily lend themselves to a reduction of hours. This is especially true as regards railroad employes, telegraph operators and farm laborers. On the railroads the principal improvement has been outside the motive department, although new schedules have been adopted in nearly all the various branches of the service. The practice of working overtime, which is very common owing to the press of business and a shortage of men, makes a railroad schedule of very little use in determining the actual pay drawn by employes. In the case of engineers and firemen this overtime sometimes amounts to as much as 40 per cent of regular wages.

The unsuccessful strike of the telegraph operators in 1905 for an increase of wages has been fully justified by the recent advance granted to all operators on the Great Northern line between St. Paul and the coast, which was afterward made to include those on the Montana Central road. The advance was $5 a month. Wages for farm labor are from $35 to $45 a month, while

experienced men who can handle water are sometimes paid $65. Lumber men in the woods get from $45 a month upward, but the hours are 9 and 10 a day. Sanitary conditions in bunk and cook houses are much improved over former years, so that there is now little cause for complaint. In the building trades wages have been increased in some localities and the hours have generally been shortened to 8 a day. Notwithstanding any statements to the contrary, it is believed to be entirely susceptible of proof that no contemplated building operations have been suspended because of any andvance in wages by the building trades.

Every architect and builder will admbit that, of the total cost of building, the actual labor cost does not exceed in any case one-fifth, the balance representing the cost of material. Now, on a $10,000 building, the labor cost would not exceed $2,000, while the cost of material would be $8,000. Therefore, if on an average wages have been increased 20 per cent, the increased cost of building by reason of this advance would be $400, while on the other hand if building material has advanced 60 per cent, which is certainly a very conservative estimate, the enhanced cost of building for this reason is $4,800.

The latter figure might well, and doubtless has in some instances, prevented building, but it is ridiculous to suppose that any man would abandon his plans because of an added expense of $400, while he entirely ignored an advance of $4,800.

In the general occupations such as book-keeping, clerks, brewers, bookbinders, teamsters, bricklayers, section and trackmen, and many others, there has been no material changes except such as may be expected under prosperous business conditions. Common labor in all parts of the State is paid at the rate of from $2,50 to $3.00 a day, and 8 or 9 hours is the rule.

The literal eight-hour day for miners in Butte, granted in May, 1906, was followed on November 15, 1906, by a voluntary increase in wages, not only of the miners, but of other employes in and about the mines, as well as the mill and smelter men of Anaconda and Great Falls. The official notice posted at the principal mines was as follows:

"Beginning on the fifteenth day of November, 1906, the wages of all men employed underground will be increased in the sum of twenty-five cents a day.

"This increase is made by this company on account of the present satisfactory condition of the metal market, and it is understood that it will be allowed so long as the price of electrolytic copper remains at 18 cents a pound or over.

"Dated this tenth day of November, 1906."

The corporations that posted this notice were: Anaconda Copper Mining Company, Boston and Montana Consolidated Copper and Silver Mining Company, Butte and Boston Consolidated Mining Company, Parrot Silver and Copper Company, Trenton Mining and Development Company, Washoe Copper Company, Red Metal Mining Company, North Butte Mining Company, La France Mining Company, and the other W. A. Clark companies.

The follow notice was posted at the smelters in Anaconda and Great Falls:

"Beginning November 15, 1906, the wages of all men employed in or about the works of this company who are now receiving less than $3.00 a day will be advanced to that sum," and the same reasons for this action are stated. Many of the employes at these smelters were already receiving $3.00 a day or more, but the order will affect probably not less than 1,00 men in the two cities mentioned, who have been receiving $2.50 and $2.75 a day. Smeltermen in Butte were not included in the order for the reason that in the one plant now operating in that city, the Butte Reduction Works, wages have for some time been from $3 a day up.

This is the first advance in the wages of miners since the organization of the Butte Miners' Union on May 13, 1879. It is purely local so far as the miners are concerned, and it is doubtful if the advance will be extended to other parts of the State. This addition to miners' wages will make a substantial increase in Butte's yearly pay roll, and the two orders will beneficially affect not less than 10,000 men directly.

Where white labor is employed on Government reclamation works the wages for common labor are $3.00 a day at 8 hours. Board is generally $1.00 a day. The Indians are paid less. On railroad construction the wages are less and the hours are longer than on the canals, and the class of labor is also very different. In the beet fields the work is done by contract at $20 an acre for the season.

Union rules and conditions prevail universally in the trades, and are quite general among common labor in the cities and towns. They are not recognized, however, on Government or railroad construction work.

In Butte and Helena, hours for printers have been reduced to seven and one-half a day, and in the former city cooks and waiters have eight hours.

The annual agreement between the operators and the coal miners was signed at Helena on September 1, 1906, and secured a number of favorable concessions for the 2,300 men employed.

The importance of concerted effort in protecting and advancing the interests of wage-workers, is shown in the fact that among that class of employers, where no organization exists there has been neither shortening of hours nor advance in wages. Consequently this numerous body is today in the worst condition of any class of employees.

This is especially true of office men and women, clerks, except in a few cities, bank employes, agents, and house workers, who have to meet the increased cost of living on practically the same rate of wages that prevailed ten years ago.

SPOTTED FEVER.

Well maintained efforts during a number of years have been made to determine the origin of this dreaded disease, and if possible, secure immunity from its ravages. In the beginning of this work, some opposition developed, it being held that agitation and publicity would only result in retarding development of the Bitter Root Valley, driving out settlers and destroying real estate values. These direful results, however, had all been accomplished by the fever itself, and conditions throughout the valley were rapidly becoming unbearable. By reason of the fact that a large percentage of victims were men employed in sawmills and lumber camps whose expenses while sick or at death had to be borne by the labor unions, this bureau first insisted upon an investigation of conditions by the State Board of Health, believing that it was better for all concerned that the truth should be known, and with a view of discovering both the source of the disease and a practical remedy.

Many scientists have been in the field during the fever season the past five years, and a theory was developed early in the investigation that the bite of wood ticks was responsible for its transmission. The following letter, published in August, 1906, gives the latest particulars regarding the progress of investigation upon this theory, which seems to be generally conceded to be correct. Dr. Ricketts was engaged by the Missoula Chamber of Commerce, and assisted by an appropriation from the County Commissioners of Missoula and Ravalli Counties in making his investigations.

AN EXPERT'S REPORT.

Chicago, August 9, 1906.

To the Members of the Chamber of Commerce, Missoula, Montana. Gentlemen:—In view of the interest which your body showed in the investigation of spotted fever, which I conducted this spring, by soliciting aid from the counties of Missoula and Ravalli, I consider it my duty and privilege to report to you the results which I have obtained.

I may first state, what you are probably aware of, that the conclusions of previous investigations had not been in perfect accord. The theory that the disease is transmitted by the bite of the tick, which Doctors Wilson and Chowning had the credit of bringing before the public, had never been anything more than a theory. No actual proof that the tick is culpable had ever been obtained, and the theory rested only on a circumstantial basis, which, however, was rather strong evidence under the conditions.

Opinion also differed as to the cause of the disease. A blood parasite had been described by the above named doctors, but a later representative of the United States Public Health and Marine Hospital Service, Dr. Stiles, threw some doubt on the existence of this parasite.

In view of this state of affairs, I was obliged in my work to open the whole subject anew, leaving out of mind for the time being the work previously done.

In studying a disease like spotted fever, one's first attempt, logically, should be to find the microbe which causes the disease, for spotted fever is undoubtedly a germ disease. If one is able to recognize the germ and cultivate it artificially, all subsequent investigations which bear on the methods of transmission, prevention and cure,

are made much easier. Although I worked continuously at this phase of the subject, it has been impossible up to the present time to identify the microbe with the microscope, nor could it be recognized or cultivated artificially by any one of the methods familiar to bacteriologists. In this respect spotted fever resembles a number of other diseases, such as measles and scarlet fever. This may be due to the very minute size of the organism, or to other properties which render its identification difficult.

However, a great deal may be learned about a disease and its microbe, by indirect methods of study, even when the microbe itself is too small to be seen.

For the purpose of such study I began animal experiments, and succeeded in transmitting the disease to the monkey and guinea pig, by inoculating them with blood which had been drawn from patients.

These experiments showed that the microbe, whatever its size and nature, actually does exist in the blood of those who have the disease, a point which up to this time had been a doubtful one.

By still other experiments of an indirect nature I found the approximate size of the microbe, a fact which will be of importance in further attempts to identify it.

Interesting and important as these results are theoretically, they are of much more importance from the practical standpoint. Having found susceptible animals, it became possible to test the tick theory of transmission at once.

This I did, and am now able to report that the tick has the power of transmitting the disease from one animal to another. The question, of course, will arise in your mind as to whether this is sufficient proof that the tick is the means by which man is affected. To this I would say that it is presumptive evidence of a very strong character, especially when you take into consideration the facts that the disease begins in the spring when the ticks first make their appearance, and disappears when the ticks disappear, and the further fact that almost no case is known in which tick bites have been absent. In those instances in which it is said that the patients had not been tick bitten, it is probable that the bite took place without their knowledge.

I feel very conservative about spreading the news that the bite of the tick causes the disease in man, having no desire to cause a panicky state of mind among those who live on the west side of the valley. At the same time it is necessary to recognize the fact that the tick is capable of transmitting the disease.

With this statement, however, should go a word of explanation. Nothing is more certain than this, that not all ticks are able to transmit spotted fever. This must be plain to everybody in the valley, since practically every one on the west side is bitten by ticks, yet only a few contract the disease. Spotted fever can be given to man only by those ticks which have in some way contracted the disease, and in view of the small number of cases of the disease, compared with the large number who are tick bitten, it is evident that the number of infected ticks must be very small. The mere knowledge that the tick can transmit the disease makes the situation no more serious than it was before. I should rather say that it improves the situation to this extent, that the people now know what it is that they have to guard against. They should protect themselves against tick bites as much as possible, and, in case they are tick bitten they should cauterize the bites with strong carbolic acid at once. This cauterization would better be done by a physician whenever this is convenient, in order to prevent needless burning. Whenever ticks are picked off the person of one who has spotted fever, the ticks should be either destroyed, or rather should be turned over alive to the attending physician in order that experiments may be made.

Where the tick gets the disease, and how the disease is kept alive from one year to another are still unsolved questions; but they are questions which are now open to solution, through the use of the animals whose susceptibility I was so fortunate as to find.

From the fact that certain sections of the county appear to be heavily infected, while others are free from the disease, it is evident that there is some local source for the disease in the infected districts. The probable answers to these questions are already in my mind, but you can readily see the impropriety of my giving them out until I can prove them to be correct.

Other possibilities in the way of prevention and cure are now opened up, and I may say that further progress was limited this year only by the brevity of the season during which the disease prevails.

It is my intention to return to the Bitter Root Valley next year to take up those phases of the disease which have the most practical importance, the eventual purpose being to find a specific method of prevention or cure. The work will be pushed with all the speed which is compatible with reliable results. I shall hope to find the same spirit of co-operation on the part of public officials, physicians and other residents of the valley which made my work possible this year.

I have communicated these results to the Montana State Board of Health, and

shall be glad to co-operate with them in any steps which may lead to the prevention or eradication of the disease.

It will doubtless interest you to know that Dr. King, of the Public Health and Marine Hospital Service, working by my side in the laboratory of the Northern Pacific hospital, repeated some of my animal experiments, obtaining the same results which I had gotten previously. Dr. King, I understand, has also transmitted the disease from one animal to another by means of the tick. H. T. RICKETTS.

For some time the treatment of tick bites by carbolic acid mentioned in this letter, has been quite generally practised, with good results. In personal experience the Commissioner has had equally good success with a simple mixture of sulphur and lard liberally applied. Care should be taken in removing a tick that has become fastened to the flesh to see that the head is not allowed to remain, as this will result in a disagreeable sore, even if no fever ensues.

The tick enters the flesh exactly like a screw, and in removing it must be unscrewed, not pulled out.

The disease is only prevalent during the spring floods, few, if any, cases being reported after July 4th.

From the progress made in these investigations, and the consequent knowledge so obtained, no one need hesitate about visiting or locating in the infested districts if ordinary care be taken during this short period of the year. Indeed, it is confidently expected that next season's investigations will result in a discovery of the source of the trouble, together with a specific preventative or remedy, and that this most vexatious deterrent to the rapid development of one of the most delightful and otherwise healthy districts in Montana may be fully removed.

DIRECTORY OF LABOR ORGANIZATIONS IN MONTANA

GENERAL ORGANIZATIONS.

AMERICAN FEDERATION OF LABOR.
HAND AND SHEEP SHEARERS' UNION.
WESTERN FEDERATION OF MINERS.
UNITED MINE WORKERS OF AMERICA.
INDUSTRIAL WORKERS OF THE WORLD.

CENTRAL BODIES.

Building Trades Council	Butte.
Butte Central Labor Council	Butte.
Carbon County Farmers' Union	Red Lodge
Cascade County Trades and Labor Assembly	Great Falls.
Central Labor Council	Anaconda.
Fergus County Trades Council	Lewistown.
Flathead County Trades and Labor Council	Kalispell.
Helena Trades and Labor Assembly	Helena.
Livingston Trades Council	Livingston.
Montana State Federation of Labor	Helena.
Silver Bow Trades and Labor Assembly	Butte.
Trades and Labor Assembly	Havre.
Western Montana Trades and Labor Council	Missoula.
Yellowstone Trades and Labor Council	Billings.

LOCAL ORGANIZATIONS.

American Federation of Labor	Havre.
Bakers' Union No. 142	Anaconda.
Bakers' Union No. 7	Butte.
Bakers' and Confectioners' International Union No. 149	Great Falls.
Bakers' and Confectioners' International Union No. 5	Helena.
Barbers' International Union	Anaconda.
Barbers' Protective Union No. 137	Billings.
Barbers' Protective Union No. 21	Butte.
Barbers' Protective Union No. 179	Great Falls.
Barbers' Protective Union	Havre.
Barbers' Protective Union No. 170	Helena.
Barbers' Protective Union No. 398	Kalispell.
Barbers' Protective Union	Livingston.
Barbers' Protective Union No .4.	Missoula.
Bartenders' International Union	Anaconda.
Bartenders' International Union	Butte.
Bartenders' International League of America	Havre.
Bartenders' Protective Union No. 221	Helena.
Bartenders' International Union No. 817	Missoula.
Blacksmiths' and Helpers' Union No. 144	Anaconda.
Blacksmiths—International Brotherhood of	Butte.
Blacksmiths' International Union	Lewistown
Beer Drivers' and Bottlers' Branch No. 231	Anaconda.
Beer Drivers' and Bottlers' Branch No. 231	Billings.
Beer Drivers' and Bottlers' Branch No. 231	Butte.
Beer Drivers' and Bottlers' Branch No. 231	Great Falls.
Beer Drivers' and Bottlers' Branch No. 231	Helena.
Blacksmiths' and Helpers' Union	Great Falls.
Boilermakers	Butte.
Boilermakers	Havre
Bookbinders' Protective Union No. 101	Butte.
Brewers' Union No 66	Butte.
Brewers Union—Branch of No. 66	Anaconda.
Brewers' Union—Branch of No. 66	Basin.
Brewers' Union—Branch of No. 66	Billings.
Brewers' Union—Branch of No. 66	Bozeman.
Brewers' Union—Branch of No. 66	Deer Lodge.
Brewers' Union—Branch of No. 66	Dillon.
Brewers' Union—Branch of No. 66	Great Falls.
Brewers' Union—Branch of No. 66	Havre.
Brewers' Union—Branch of No. 66	Helena.
Brewers' Union—Branch of No. 66	Kalispell.
Brewers' Union—Branch of No. 66	Lewistown.
Brewers' Union—Branch of No. 66	Missoula.

Brewers' Union—Branch of No. 66	Philipsburg.
Brewers' Union—Branch of No. 66	Silesia.
Brewers' Union—Branch of No. 66	Townsend.
Brewers' Union—Branch of No. 66	Virginia City.
Bottlers' Union No. 346	Kalispell.
Bricklayers', Masons' and Plasterers' Union No. 2	Anaconda.
Bricklayers', Masons' and Plasterers' Union No. 1	Butte.
Bricklayers', Masons' and Plasterers' Union No. 3	Great Falls.
Bricklayers', Masons' and Plasterers' Union No. 4	Helena.
Bricklayers', Masons' and Plasterers' Union No. 8	Kalispell.
Bricklayers', Masons' and Plasterers' Union No 7	Missoula.
Brickmasons' and Plasterers' Union	Havre.
Building Laborers' Int. Protective Union of America No. 3	Anaconda.
Building Laborers' Int. Protective Union of America No. 1	Butte.
Building Laborers' Int. Protective Union of America No. 2	Great Falls.
Building Laborers' Int. Protective Union of America No. 4	Helena.
Butchers' Union No. 22	Anaconda.
Butchers'	Butte.
Butchers' Union No. 29	Great Falls.
Butchers' Union No. 17	Helena.
Carpenters and Joiners—United Brotherhood of No 88	Anaconda.
Carpenters and Joiners—United Brotherhood of	Basin.
Carpenters and Joiners—United Brotherhood of No. 256	Belt.
Carpenters and Joiners—United Brotherhood of No. 112	Butte.
Carpenters and Joiners—United Brotherhood of No. 286	Great Falls.
Carpenters and Joiners—United Brotherhood of No. 923	Havre.
Carpenters and Joiners—United Brotherhood of No. 153	Helena.
Carpenters and Joiners—United Brotherhood of No. 911	Kalispell.
Carpenters and Joiners—United Brotherhood of No. 816	Lothrop.
Carpenters and Joiners—United Brotherhood of No. 28	Missoula.
Carpenters and Joiners—United Brotherhood of	Red Lodge.
Carpenters and Joiners—United Brotherhood of	Whitefish.
Cigarmakers' International Union of America No. 361	Anaconda.
Cigarmakers' International Union of America No. 362	Butte.
Cigarmarkers' International Union of America No 209	Great Falls.
Cigarmakers' International Union of America	Livingston.
Clerks—Retail, National Protective Association No. 35	Anaconda.
Clerks—Retail, National Protective Association No. 33	Billings.
Clerks—Retail, National Protective Association No 12	Butte.
Clerks—Retail, National Protective Association No. 193	Great Falls.
Clerks—Retail, National Protective Association No. 171	Havre.
Clerks—Retail, National Protective Association No. 684	Helena.
Clerks—Retail, National Protective Association No. 209	Kalispell.
Clerks—Retail, National, Protective Association No. 9	Missoula.
Confectioners' Union No. 387	Butte.
Cooks' and Waiters' Union	Havre.
Cocks' and Waiters' Alliance No 732	Kalispell.
Drug Clerks—Great Falls	Great Falls.
Electrical Workers—International Brotherhood of No. 65	Butte.
Electrical Workers—International Brotherhood of No. 122	Great Falls.
Electrical Workers—International Brotherhood of No. 185	Helena.
Electrical Workers—International Brotherhood of No. 408	Missoula.
Elevator and Bell Boys' Union No. 339	Butte.
Engineers' Union No. 114—Stationary	Anaconda.
Engineers' Union No. 83—Stationary	Butte.
Engineers' Union No. 86—Stationary	Granite.
Engineers' Union No. 14—Stationary	Great Falls.
Engineers' Union No. 116—Stationary	Helena.
Engineers—Helena Steam	Helena.
Engineers Stationary	Livingston.
Engineers Union No. 223	Missoula.
Engravers—Photo—International Typographical Union No. 25	Anaconda.
Expressmens' Union No. 18	Great Falls.
Farmers' Union No. 499—Clark's Fork	Bridger.
Farmers' Union No. 511—Star	Chance.
Farmers' Union No. 495—Fishtail	Fishtail.
Farmers' Union No. 351	Frenchtown.
Farmers' Union No. 356—Burr Creek	Hamilton.
Farmers' Union No. 496—Poverty Flat	Joliet.
Farmers' Union No. 514	Joliet.
Farmers' Union No. 494—East Rosebud	Morris.
Farmers' Union No. 443—Potomac	Potomac.
Farmers' Union No. 492—Red Lodge Creek	Red Lodge.
Farmers' Union No. 8—Rock Creek Valley	Red Lodge.
Farmers' Union No. 490—Tony and Linley	Fairbanks.
Federal Labor Union No. 133	Billings.
Federal Labor Union No. 135	Bonita.
Federal Labor Union No. 48	Clinton.
Federal Labor Union No. 145	Columbus.
Federal Labor Union No. 1	Great Falls.
Federal Labor Union No. 380	Havre.
Federal Labor Union No. 199	Helena.
Federal Labor Union No. 175	Kalispell.
Federal Labor Union No. 7	Lewistown.
Federal Labor Union No. 27	Livingston.
Federal Labor Union No. 302	Marysville.
Federal Labor Union No. 43	Missoula.

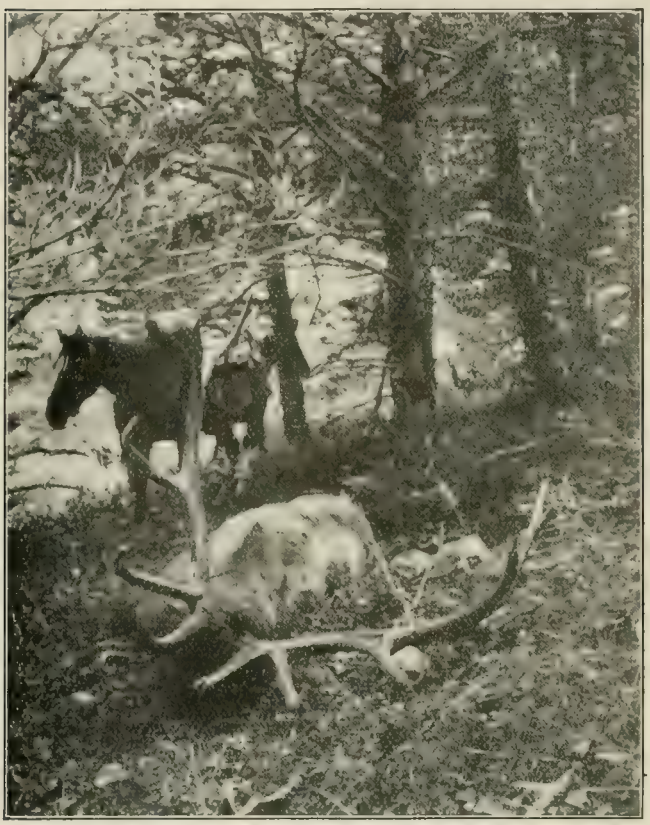
Flour and Cereal Mill Employees International Union	Kalispell.
Granite Cutters' International Union	Butte.
Granite Cutters' International Union No. 38	Helena.
Hack and Cab Drivers' Union No. 218	Helena.
Hackdrivers' Union No. 185	Butte.
Horseshoers—International Union of—No. 83	Butte.
Hotel and Restaurant Employees' No. 1	Anaconda.
Hotel and Restaurant Employees' No. 2	Butte.
Hotel and Restaurant Employees' No. 3	Great Falls.
Hotel and Restaurant Employees' No. 126	Helena.
Hotel and Restaurant Employees' No. 204	Missoula.
Iron Molders—International Union of—No. 309	Anaconda.
Iron Molders—International Union of—No. 276	Butte.
Iron Molders—International Union of—No. 93	Great Falls.
Labor Union No. 512	Belgrade.
Labor Union	Bozeman.
Labor Union	Hamilton.
Labor Union No. 156	Lewistown.
Labor Union No. 57	Quartz.
Labor Union No. 49	Superior.
Lathers' Union—Wood, Wire and Metal, No. 69	Butte.
Lathers' Union—Wood, Wire and Metal, No. 212	Missoula.
Lathers' Union No. 1	Great Falls.
Laundry Workers' Union No. 1	Anaconda.
Laundry Workers' Union No. 225	Billings.
Laundry Workers' Union No. 4	Butte.
Laundry Workers' Union No. 19	Great Falls.
Laundry Workers' Union No. 15	Helena.
Laundry Workers' Union No. 43	Kalispell.
Laundry Workers' Union No. 21	Missoula.
Lumbermen's Union—Big Blackfoot No. 47	Bonner.
Lumbermen's Union—Darby No. 481	Darby.
Lumbermen's Union—Deer Creek No. 161	Deborgia.
Lumbermen's Union No. 10	Eddy.
Lumbermen's Union—Blodgett Creek No. 287	Hamilton.
Lumbermen's Union—Sawtooth No. 109	Hamilton.
Lumbermen's Union—No. 20	Heron.
Lumbermen's Union—No. 16	Huson.
Lumbermen's Union—No. 108	Lothrop.
Lumbermen's Union No. 24	Plains.
Lumbermen's Union—Grant Creek No. 34	Missoula.
Lumbermen's Union—Nine Mile No. 41	Stark.
Lumbermen's Union—No. 198	Stevensville.
Lumbermen's Union—St. Regis No. 50	St. Regis.
Lumbermen's Union—No. 24	Thompson Falls.
Lumbermen's Union—No. 279	Victor.
Lumbermen's Union—No. 23	Whitefish.
Machinists—International Association of No. 88	Butte.
Machinists—International Association of No. 287	Great Falls.
Machinists—International Association of	Havre.
Machnists—International Association of	Livingston.
Machinists—International Association of No. 99	Missoula.
Machinists' Helpers No. 10533	Missoula.
Mechanics' Union No. 397	Columbus.
Messenger and Pin Boy's Union No. 348	Butte.
Mill and Smeltermen's Union No. 117	Anaconda.
Mill and Smeltermen's Union No. 74	Butte.
Mill and Smeltermen's Union No. 126—East Helena	Helena.
Mill and Smeltermen's Union No 162	Granite.
Mill and Smeltermen's Union No. 16	Great Falls.
Miners' Union—Aldridge No. 57	Aldridge.
Miners' Union—Barker No. 12	Barker.
Miners' Union—Basin No. 23	Basin.
Miners' Union—Butte No. 1	Butte.
Miners' Union—Coloma No. 209	Coloma.
Miners' Union—Corbin No. 191	Corbin.
Miners' Union—Horr	Electric.
Miners' Union—Elkhorn No. 157	Elkhorn.
Miners' Union—Granite No. 4	Granite.
Miners' Union—Hassel No. 35	Hassel.
Miners' Union—Mt. Helena No. 138	Helena.
Miners' Union—Jardine No. 139	Jardine.
Miners' Union—North Moccasin No. 111	Kendall.
Miners' Union—Judith Mountain No. 107	Maiden.
Miners' Union—Marysville No. 103	Marysville.
Miners' Union—Belt Mountain No. 7	Neihart.
Miners' Union—Norris No. 104	Norris.
Miners' Union—Pony No. 131	Pony.
Miners' Union—Ruby No. 308	Ruby.
Miners' Union—Virginia City No. 129	Virginia City.
Miners' Union—Mayflower No. 105	Whitehall.
Miners' Union—Winston No. 25	Winston.
Miners Union—Zortman No. 109	Zortman.
Mine Workers—United of America No. 1340	Bridger.
Mine Workers—United of America No. 2046	Chestnut.
Mine Workers—United of America	Cokedale.
Mine Workers—United of America	Havre.
Mine Workers—United of America No. 1771	Red Lodge.

Mine Workers—United of America No. 2220 ..... Sand Coulee.
Mine Workers—United of America No. 2301 ..... Stockett.
Musicians—American Federation of, No. 81..... Anaconda.
Musicians—American Federation of, No. 365..... Great Falls.
Musicians—American Federation of ..... Helena.
Musicians' Mutual Protective Union No. 51..... Butte.
Newsboys' Union No. 22 ..... Missoula.
Newspaper Carriers ..... Butte.
News Writers—International No. 31 ..... Butte.
Office Eployees' Union No. 149..... Butte.
Operative Plasterers' Union No. 119 ..... Butte.
Operative Plasterers' Union No. 86 ..... Helena.
Operative Plasterers' Union..... Missoula.
Painters, Decorators and Paperhangers—
United Brotherhood of No. 182..... Anaconda.
United Brotherhood of No. 212 ..... Butte.
United Brotherhood of No. 260 ..... Great Falls.
United Brotherhood of No. 1023 ..... Helena.
United Brotherhood of No. 745..... Kalispell.
United Brotherhood of ..... Livingston.
United Brotherhood of ..... Missoula.
United Brotherhood of ..... Whitefish.
Placer Miners' Union No. 312 ..... Alta.
Papermakers—Brotherhood of ..... Manhattan.
Porters and Bootblacks ..... Butte.
Printing Trades Council—Allied ..... Butte.
Printing Trades Council—Allied ..... Helena.
Printing Pressmen's Int. Union of N. A. ..... Butte.
Printing Pressmen's Int. Union of N. A.—No 9..... Helena.
Plumbers, Steam and Gas Fitters—
Journeymen of the U. S. ..... Anaconda.
Journeymen of the U. S. and Canada No. 41..... Butte.
Journeymen of the U. S. No. 139 ..... Great Falls.
Journeymen of the U. S. ..... Missoula.
Ropemen's Union No. 184 ..... Butte.
Shoemakers' Union No. 24 ..... Anaconda.
Shoemakers' Union No. 27 ..... Butte.
Stablemen's Union No. 286 ..... Great Falls.
Stereotypers an Electrotypers Int. Union ..... Butte.
Stonemasons' International Union No. 4 ..... Helena.
Street Car Employees Union No. 369 ..... Anaconda.
Street Railway Men's Union No. 30 ..... Helena.
Street Railway Employees—Amalgamated of N. A. ..... Butte.
Tailors—Journeymen of America No. 151 ..... Anaconda.
Tailors—Journeymen of America No. 25 ..... Butte.
Tailors—Journeymen of America No. 43 ..... Great Falls.
Tailors—Journeymen of America No. 265 ..... Helena.
Team Owners' Union No. 505..... Dean.
Team Owners' Union No. 504 ..... Havre.
Teamsters and Stablemen's Union No. 196 ..... Anaconda.
Teamsters' Union No. 31 ..... Billings.
Teamsters' Union No. 15 ..... Butte.
Teamsters' and Drivers' Union No. 177 ..... Helena.
Team Owners' Union No. 6 ..... Lewistown.
Telegraphers—Commercial ..... Butte.
Telephone Operators' Union No. 33 ..... Butte.
Textile Workers—United No. 502 ..... Helena.
Theatrical Stage Employees' Union ..... Butte.
Theatrical Stage Employees' Union ..... Helena.
Tin, Sheet Iron and Cornice Workers' Union ..... Butte.
Tin, Sheet Iron and Cornice Workers' Union No. 8..... Great Falls.
Typographical Union—International No. 255..... Anaconda.
Typographical Union—International No. 398 ..... Billings.
Typographical Union ..... Bozeman.
Typographical Union—International No. 126..... Butte.
Typographical Union—International No 256 ..... Great Falls.
Typographical Union ..... Havre.
Typographical Union—International No. 95 ..... Helena.
Typographical Union ..... Livingston.
Typographical Union—International No. 277..... Missoula.
Women's Protective Union No. 32 ..... Anaconda.
Womens' Protective Union No. 148 ..... Butte.
Woodworkers—Amalgamated Int. Union of America..... Butte.
Woodworkers—Amalgamated Int. Union of America No. 354.... Missoula.
Workingmen's Union No. 345 ..... Anaconda.
Workingmen's Union No. 5 ..... Butte.
Workingmen's Union ..... Havre.
Wrappers and Mailers' Union ..... Butte.

RAILWAY ORDERS.

O. R. C.—Black Eagle Lodge No. 356..... Great Falls.
O. R. C.—Livingston Lodge No. 371 ..... Livingston.
O. R. C.—Yellowstone Lodge No. 191 ..... Glendive.
O. R. C.—Montana Lodge No. 272 ..... Havre.
O. R. C.—Missoula Lodge No. 243 ..... Missoula.
O. R. C.—Kalispell 471 ..... Whitefish.

Brotherhood of Locomotive Engineers—	
Division No. 274	Anaconda.
Division No. 195	Forsyth.
Division No. 504	Great Falls.
Division No. 499	Kalispell.
Division No. 258	Missoula.
Brotherhood of Locomotive Firemen—	
Copper City Lodge No. 500	Anaconda.
Silver State Lodge No. 517	Clancy.
Landmark Lodge No. 128	Glendive.
Sun River Lodge No. 453	Great Falls.
Mt. Helena Lodge No. 423	Helena.
Lodge No. 482	Kalispell.



A KING OF THE FOREST DOWN.

BUTTE FREE EMPLOYMENT OFFICE.

Statement Showing the Transactions of the Butte Free Public Employment Office for the Year Ended November 30, 1905.

MONTH	Applications for Work			Applications for help	Positions Filled			Nature of Positions Filled By Males				Nature of Positions Filled by Females				Positions Filled In City		Positions Filled out of City	
	Male	Female	Total		Male	Female	Total	Ranch hands, haymakers, Milkers, etc.	Laborers, miners, section men, etc.		Miscellaneous.	Hotel and restaurant help.	Domestic		Miscellaneous.	Male	Female	Male	Female
December, 1904	591	502	1,093	865	403	386	789	51	248	(a)	104	57	249	(b)	75	175	231	227	156
January, 1905	590	513	1,103	857	401	389	790	43	233	(c)	125	50	251	(d)	88	173	246	228	140
February	552	534	1,086	811	389	375	764	20	240	(e)	129	41	244	(f)	90	175	250	214	125
March	576	435	1,011	834	429	376	805	82	221	(g)	120	61	227	(h)	88	189	251	240	125
April	583	466	1,049	870	441	393	834	91	195	(i)	153	58	244	(j)	91	208	274	233	119
May	583	561	1,144	989	456	437	893	71	268	(k)	117	62	273	(l)	102	198	299	258	148
June	566	549	1,115	958	461	426	887	90	298	(m)	73	96	245	(n)	85	227	260	234	166
July	806	565	1,371	1,590	752	446	1,198	377	334	(o)	41	107	273	(p)	66	281	254	471	192
August	721	557	1,278	1,059	593	419	1,012	234	318	(q)	41	78	287	(r)	54	236	268	354	151
September	689	510	1,199	981	488	393	881	165	271	(s)	52	65	214	(t)	114	211	251	277	142
October	521	490	1,011	849	373	290	663	95	222	(u)	56	51	198	(v)	41	168	151	205	129
November	576	519	1,095	941	428	330	758	82	261	(w)	85	43	242	(x)	45	185	199	243	131
Total	7,354	6,201	13,555	11,653	5,614	4,660	10,274	1,401	3,114		1,096	796	2,947		939	2,357	2,924	3,184	1,731

(a) 27 Woodchoppers.
(b) 48 Canvassers.
(c) 65 Woodchoppers; 30 ice men.
(d) 47 Canvassers.
(e) Woodchoppers; 27 ice men; 12 canvassers.
(f) 40 Canvassers.
(g) 73 Woodchoppers.
(h) 54 Canvassers.
(i) 69 Sheep shearers, herders, camp cooks, etc; 56 Woodchoppers.
(j) 52 Canvassers.
(k) 38 Woodchoppers; 30 Sheepshearers.
(l) 55 Canvassers and solicitors.
(m) 8 Woodchoppers; 46 sheepshearers.
(n) 31 Canvassers and solicitors.
(o) 14 Woodchoppers.
(p) 27 Canvassers and solicitors.
(q) 5 Woodchoppers.
(r) 33 Canvassers and solicitors.
(s) 21 Woodchoppers
(t) 27 Canvassers and solicitors.
(u) 41 Woodchoppers.
(v) 24 Canvassers and solicitors.
(w) 16 Woodchoppers.
(x) 19 Canvassers and solicitors.

BUTTE FREE EMPLOYMENT OFFICE.

Statement Showing the Transactions of the Butte Free Public Employment Office for the Year Ended November 30, 1906.

MONTH	Applications for Work			Applications for help	Positions Filled			Nature of Positions Filled by Males			Nature of Positions Filled by Females			Positions Filled In City		Positions Filled out of City	
	Male	Female	Total		Male	Female	Total	Ranch Hands, Haymakers, Milkers, etc.	Laborers, miners, section men, etc.	Miscellaneous.	Hotel and restaurant help	Domestic	Miscellaneous.	Male	Female	Male	Female
December, 1905	430	484	914	838	363	301	664	37	244 (a)	82	51	201 (b)	49	179	194	184	110
January, 1906	471	509	980	786	349	297	646	18	255 (c)	76	44	195 (d)	58	136	159	213	138
February	390	478	868	636	241	196	567	13	205 (e)	53	30	131 (f)	35	103	101	168	95
March	407	497	904	721	358	297	655	35	286 (g)	37	45	201 (h)	51	163	179	195	118
April	570	591	1,161	925	385	317	702	75	260 (i)	50	36	241 (j)	40	172	205	213	112
May	593	611	1,204	1,078	401	388	789	97	275 (k)	29	34	293 (l)	61	197	222	204	166
June	605	720	1,325	1,166	514	471	985	307	91 (m)	116	46	332 (n)	93	217	308	297	163
July	685	791	1,476	1,203	531	497	1,028	410	103	18	48	341 (o)	108	322	307	209	190
August	561	683	1,244	1,008	397	410	807	292	96	9	42	289 (p)	79	153	295	244	175
September	472	591	1,063	805	292	387	679	136	141	16	45	251 (q)	91	123	210	169	177
October	420	481	901	683	203	217	420	66	125	12	38	135 (r)	44	101	112	102	105
November	375	383	758	527	212	196	408	37	117 (s)	58	22	141 (t)	33	95	103	104	93
Total	5,979	6,819	12,798	10,379	4,276	3,974	8,350	1,523	2,198	556	481	2,751	742	1,964	2,392	2,302	1,582

(a) 24 Woodchoppers.
(b) 20 Canvassers and solicitors.
(c) 31 Woodchoppers.
(d) 15 Canvassers and solicitors.
(e) 20 Woodchoppers.
(f) 19 Canvassers and solicitors.
(g) 30 Woodchoppers.
(h) 31 Canvassers and solicitors.
(i) 29 Woodchoppers.
(j) 21 Canvassers and solicitors.
(k) 15 Woodchoppers.
(l) 41 Canvassers and solicitors.
(m) 76 Woodchoppers.
(n) 52 Canvassers and solicitors.
(o) 64 Canvassers and solicitors.
(p) 59 Canvassers and solicitors.
(q) 47 Canvassers and solicitors.
(r) 33 Canvassers and solicitors.
(s) 30 Woodchoppers.
(t) 27 Canvassers and solicitors.

GREAT FALLS FREE PUBLIC EMPLOYMENT OFFICE.

Statement of the Transactions of the Great Falls Free Public Employment Office from the Date of Its Creation to November 30, 1906.

MONTH	Applications for Work			Applications for help.	Positions Filled			Nature of Positions Filled by Males			Nature of Positions Filled by Females			Positions Filled In City		Positions Filled Out of City	
	Male	Female	Total		Male	Female	Total	Laborers	Ranch Hands.	Miscellaneous.	Domestic	Hotel and restaurant help.	Miscellaneous.	Male	Female	Male	Female
October, 1905	53	17	70	25	8	6	14	3	3	2	4	2		3	5	5	1
November	65	23	88	41	12	5	17	3	7	2	4	1		4	5	8	0
December	47	16	63	16	3	6	9	1	2	0	4	2		1	5	2	1
January, 1906	41	23	64	18	4	5	9	1	3	4	3	2		1	1	3	4
February	42	17	59	21	7	7	14	2	5	0	5	2		2	7	5	0
March	67	22	89	38	19	12	31	6	3	0	5	7		6	10	13	2
April	93	33	126	105	60	14	74	15	40	5	9	5		12	11	48	3
May	116	20	136	98	74	16	90	20	42	12	7	9		30	12	44	4
June	125	22	147	56	24	6	30	10	14		4	2		10	5	14	1
July	98	17	115	187	63	7	70	14	39	10	3	4		18	5	45	2
August	62	13	75	73	32	7	39	17	15		7			12	5	20	2
September	37	11	48	72	18	5	23	11	7	18	4	1		11	2	7	4
October	60	22	82	52	27	8	35	7	50		3	5		6	5	21	3
November	83	24	107	57	19	7	26	11	6	2	4	3		9	5	10	2
Total	989	280	1,269	859	370	111	481	121	236	55	66	45		125	83	245	29

INDUSTRIES.

As in the past, the chief avenues of industry in Montana continue to be agriculture and mining. Commendable efforts are being made to extend the field of manufacturing enterprises, mainly with local capital, although there are some notable exceptions of outside investments. As to the field for such endeavor it may be said to be practically unlimited. There are many things, however, which must be taken into account when the establishment of any manufacturing enterprise in Montana is contemplated, among which may be mentioned the comparatively small number of consumers and the vast territory to be covered in reaching them; the entire absence of skilled factory labor, and the limited supply from which to secure new employees; high freight rates, and eastern competition. On the other hand there is the highest priced market in the United States, with fairly decent support to home industries, cheap land for buildings and unlimited water power; an abundance of raw materials easy of access; command of the services of the best mechanics on earth, and almost absolute freedom from local competition.

Among the successful enterprises now in operation is the paper mill at Manhattan, now supplying the major portion of the print paper used in the State; the Montana Chemical Company, importers of spices and manufacturers of flavoring extracts, perfumes and pharmaceutical products, a brief account of which may be found under New Industries; a branch of the National Biscuit Company, which does an enormous business from Helena; the most modern equipped sugar factory in the United States at Billings; two soap and candle factories; knit goods, woolen mill, stock food, wire fence, pancake flour, carriages, wagons, saddles and harness, boxes, sash, doors and interior finish, trunks and caskets; street cars, mining machinery, and pipe; flour mills packing houses, breweries, malt houses, distillery, and cigar factories; creameries, cheese factories, cider mills and vinegar factories, cement blocks, brick yards and clay products. In addition to these and others, there are several large railroad shops that compare favorably with those of other states and furnish employment to many hundred men. In connection with the coal mines there are extensive coke ovens, whose product is used mainly in the smelters, and there is quite an extensive production of lime.

MINERAL PRODUCTION.

Smelters in the State have been reduced to five, but their product far exceeds that of the greater number operating in former years. Those remaining are the Washoe at Anaconda, the largest in the world; the Boston and Montana at Great Falls, whose present capacity will soon be doubled;

the American Smelting and Refining Company at East Helena, the only custom smelter in the State: the Butte Reduction Works at Butte, the property of Senator W. A. Clark, and operating solely upon the output of his mines at that place, and three smelters at Cook City.

Conditions in the copper market were never so favorable for continued prosperity in that industry as at present. The small visible supply, the apparently insatiable demand, and the highly satisfactory prices, combine to establish a feeling of security, while the discovery of rich and extensive bodies of ore in old mines as well as in new districts has effectually quieted any anxiety as to the life and growth of this industry.

The figures for the current fiscal year ending June 30, 1906, show the remarkable activity prevailing in the mining industry, and the present price of silver, if maintained, together with the enormous activity in copper, will surely bring the value of metal production in 1906 to a new banner point. It is believed to be quite possible that the production for 1906 will exceed the 1905 figures by some $5,000,000.

For a detailed description of the mines and their location the reader is referred to the report of Hon. Wm. Walsh, State Inspector of Mines.

REPORT OF HON. B. H. TATEM FOR THE YEAR 1904.

(Assayer in Charge United States Assay Office, Helena.)

The conditions attendant upon the production of precious metals in Montana during 1904 were uniformly favorable and attended by more than average success. But few important discoveries of new ore deposits are noteworthy and such as occurred were large low grade bodies carrying gold and suitable for cyanide treatment in the extraction of the contained values. No new reduction works of magnitude were erected during the year, but extensive improvements were made in plants previously in operation and in the modification of engineering practice in mining and in the methods for the treatment of ore.

The aggregate value of the precious metals won by the mills, smelters and other reduction works from the ore mined and treated, together with the gold obtained from placers shows a marked increase over the yield of the preceding year. The quantity and value of each is shown below, the gold and silver being computed at the coinage rate and the copper and lead at the average market price for the year.

Description—	Quantity.	Value.
Gold, fine ounces	246,605.374	$ 5,097,785.50
Silver, fine ounces (coining rate)	14,608,089.91	18,887,227.36
Copper fine pounds, at $12.823 per cwt	283,945,330.	36,410,309.67
Lead, fine pounds, at $4.309 per cwt	4,537,598.	195,525.10
Total		$60,590,847.63

The above shows a gain of about 17 per cent in the value of the production over the preceding year. In 1903 the entire output shown by corresponding statistics, $50,276,355. The principal increases have been as fol-

lows: In gold, $507,270; in silver, $1,789,525, and in copper, $8,209,618. On the other hand the amount of lead produced shows a decrease of $191,920.

This increase in the amount of gold arose principally in ores reduced by the cyanide process. An increase is also to be noted from the tonnage shipped to and treated at the custom smelters. The increase in silver resulted from the greatest reduction of the Butte ores ever accomplished. Smelting ores from other districts also show a gain in silver nearly equal to that noted from the copper ores of Butte.

The amounts of gold and silver taken from placers, and derived from milling, cyaniding, copper, lead and smelting ores, during 1904, were as follows:

	GOLD		SILVER		
Origin	Fine Ounces	Value	Fine Ounces	Coining Value	Total Value
Placer dust	23,150.584	$478,565.03	6,418.85	$8,299.12	$486,864.15
Mill bullion	43,210.167	893,233.43	1,172,902.10	1,516,479.48	2,409,712.91
Cyanide bullion	71,349.551	1,474,926.12	95,174 52	123 053.92	1,597,980.04
In copper ores	63.507.426	1,312,815 01	9.497,745.38	12,279.913.22	13,592,728.23
In lead ores	3,060.184	63,259.62	261,898.17	338 615.83	401,875.45
In dry ores and concentrates classed as smelting ores	42,327.462	874,986.29	3,573,950.89	4,620,865.79	5,495,852.08
Total	246,605.374	$5,097,785.50	14,608,089.91	$18,837,227.36	$23,985,012.86

As has been frequently noted in reviews of the production for Montana in recent years, the most important features of the output of gold and silver were furnished by the mining of the copper ores in the Butte district and in the results achieved by the development and perfection of the cyanide process. For many years the fluctuations in the amounts of gold and silver won from the copper ores were most important, but since the advent of the cyanide process into the mining industry of Montana whereby gold is successfully extracted from tailings and low grade ores, the annual returns from this source have increased yearly until they now reach the large value shown above and so are of the greatest influence on the entire yield of gold.

The winning of copper, however, continues to be the noteworthy feature of the mining industry in Montana. More than 84 per cent of the total values won from Montana's mines in 1904, consisted of the gold, silver and copper, contained in the ores mined at Butte. The effect of this mining of copper ore at that point is enormous and far-reaching. Many thousand men are given most remunerative employment in the direct and actual mining and reduction of these ores and many thousand more persons are indirectly benefited in the furnishing of necessary supplies to such employes and their families. This, however, is of small importance in comparison with the influence exerted on the commercial life and industrial progress of the United States. Although the cities of Butte, Anaconda and Great Falls, in Montana, owe their maintenance largely to the mines at Butte, it is because of the copper furnished to the market and industries of the world by the Butte mines that the price therefor has been greatly cheapened. This has in turn

lessened the cost of electrical installations for power, while industrial enterprises generally have been undertaken in all parts of the country more energetically and more profitably. Almost one-fourth of the world's entire output of copper in 1904, came from Butte.

Production of lead in Montana for 1904 continued of comparatively small importance. However, large deposits of the metal in the State are known to be commercially profitable and it is believed that the past year witnessed the lowest point in this industry. The principal districts are those of Cascade, Meagher and Flathead Counties.

BEAVERHEAD COUNTY.

The yield of precious metals from this county in 1904 was as follows:

Description—	Quantity.	Value.
Gold, fine ounces	2,055.662	$42,494.30
Silver, fine ounces (coining rate)	34,639.71	44,786.69
Copper, fine pounds	63,815.	8,183.00
Lead, fine pounds	84,844.	3,655.93
Total		$99,119.92

The figures show considerable decrease from the production of the preceding year in the quantity of each metal during 1904.

For many years the largest operator in this county was the Hecla Consolidated Mining Company, whose smelting works mills and mining properties were at and near Glendale. Recently but little of its old time activity has been shown by this company, but as a result of operations in 1904, it is probable that they will undertake the opening and development of ground belonging to them and as yet unopened.

At Bannack but little placer mining by dredges was done in 1904. For many years large values were thus obtained from the channel of Grasshopper Creek, but the ground suitable for such operations has been exhausted and the plants have been taken to other fields. Dredging, however, was done on Horse Prairie Creek, near Grant postoffice. At the silver mining camp of Argenta little or no mining occurred in 1904.

BROADWATER COUNTY.

During the year 1904 the output of metals of this county was as follows:

Description—	Quantity.	Value.
Gold, fine ounces	6,194.488	$128,051.43
Silver, fine ounces (coining rate)	56,391.58	72,910.32
Lead, fine pounds	388,698.00	16,749.00
Total		$217,710.75

The above indicates that the production in 1904 continued about the same as that of 1903. However, all the mining districts of the county received increased attention from operators and much development and many improvements were undertaken during the year to be completed as soon as possible.

The above production comes from all sections of the county, the dis-

tricts yielding same having been those at and near Winston, Radersburg, Hassel and Diamond City.

In the Winston district, the East Pacific mine was for a long time a heavy shipper of high grade ore, carrying gold, silver and lead. Because of the exhaustion of this class of ore, the property was temporarily idle, but a reorganization of the company is being undertaken, after which a concentrator will be installed to treat the large dumps of ore. This was not sufficiently high grade for direct shipment to the smelter. Reserves of this ore also remain unbroken in the mine, which are to be mined and afterward concentrated at the new plant.

New activity was also shown at the H. & H. mine during 1904. After a long idleness this property was unwatered and the exploration of the old workings begun with a view to further development and working.

Above Hassel and in the Park district at the camp of Mason, a syndicate erected a concentrator to handle the ores at that point. The plant will be ready for operation during 1905 and should add materially to the output from Broadwater County.

Near Radersburg and Diamond City new quartz veins are being opened and worked profitably, in addition to the mining done at these points for many years past in both quartz and placer.

CASCADE AND CHOUTEAU COUNTIES.

The precious metal contents won from the ores mined in these counties during 1904 were as follows:

Description—	Quantity.	Value.
Gold, fine ounces	7,647.104	$158,079.67
Silver, fine ounces (coining rate)	249,380.80	322,431.74
Lead, fine pounds	1,472,155.	63,435.16
Total		$543,946.57

These figures show an improvement in the amount produced in Cascade county during the year. The values are won from the mines at Barker and Neihart, several of which appear to be in the most satisfactory conditions generally.

The City of Great Falls is the county seat of Cascade County. Near it are located the famous rapids of the Missouri River, from which the city was named. On the banks of these is the smelter and refinery of the Boston & Montana Consolidated Copper & Silver Mining Company. The enormous water power available as yet has been but partially developed and utilized for the reduction of the great tonnage mined by this company at its Butte properties. The distance from the mines to the smelter is 178 miles. This is daily traversed by heavy freight trains loaded with crude ores for reduction and conversion into copper bars at this plant. The railroad extends over the main range of the Rocky Mountains and is all the way in a mountainous country, where heavy grades and long tunnels are frequent. The expense of this long haul is more than offset by the low cost of treatment made possible

by the water power available. This copper smelter is in every way modern in its methods and well equipped for the work required of it.

Mining in Chouteau County resulted in the winning of placer gold from the region of Gold Butte and near the international boundary, also from newly discovered and opened deposits of ore that are amenable to cyanide treatment, in the Little Rocky Mountains, near the southeast corner of the county. Capital has been freely offered for the development of these properties and it is likely that this region will develop into one of the most important districts of its kind in the State.

DEER LODGE COUNTY.

Below are shown the quantities and values of the gold and silver taken from the ores mined in this county during 1904:

Description—	Quantity.	Value.
Gold, fine ounces	9,947.483.	$205,632.72
Silver, fine ounces (coining rate)	9,180.30	11,869.48
Total		$217,502.20

These figures show an increase over the yield of the preceding year which arose from the development at and working of the Southern Cross mine, the milling of the ore taken from the Cable mine and from the placer mining of gold from French gulch and elsewhere

The Southern Cross mine is located seventeen miles from Anaconda and during 1904 the ore therefrom was hauled to the Washoe smelter for treatment. During the year large holdings of the stock in the company changed hands and the new owners have commenced the erection of a sixty-ton concentrator to handle its product instead of sending same to Anaconda as at present.

The Washoe smelter at Anaconda is the largest and most modern reduction plant for copper ores in the world. In 1904 an average of 5,000 tons of ore was treated daily. This was received from the mines of the Anaconda, Parrot, Colorado and other companies at Butte.

These works consist of the sampling plant, concentrator, blast furnaces, roasting plant, reverbatory plant, converter plant and the electrolytic refinery in the valley to the north.

The concentrator is equipped with a sampling mill built on the Taylor & Brunton plan. Here is also located the upper power house. The large engines drive the great concentrator as well as generate electricity for the works and for the City of Anaconda. This concentrating mill covers more than six acres of ground and is built in independent halves of four units each. Each of the eight units is alike in arrangement and equipment and the methods followed in each are identical.

The mill is situated on a hillside. The ore is brought from the mines in large steel ore cars across a trestle to the bins. For each of the units the corresponding bin holds 1,250 tons. The ore may be considered as progressing downward through different sections of each unit. These sections may be designated in order as the crusher section, the middlings section, the re-

grinding section and the concentrates section. All coarse concentrates from the first sections go to separate bins at the back of the mill below the ore bins. The fine concentrates go first to the concentrates section and finally to the McDougal calciners.

The blast furnaces are seven in number, each of large size and furnished with enormous fore-hearths, into which the slag spouts pour a constant stream of matte and slag, the latter flowing off in a steady stream along a launder. The fore-hearths are reservoirs for matte from which it is drawn off into eleven-ton pots for the converters. The resulting slag is very clean, averaging about three-tenths of one per cent copper. The matte varies from 40 to 45 per cent copper. These blast furnaces treat the coarse concentrates, the coarse first-class ore, the briquettes from slimes and tailings and the slag and matte chips from the reverberatories and converters.

The reverberatory plant consists of fourteen furnaces, set back to back in two rows and housed in steel buildings, well built and well ventilated. Here matte is also made, but without any forced draft, except that of the main flue. In this plant is to be noted the most modern smelting practice at the minimum of cost. All material to be treated at these furnaces is loaded into hopper bottom cars, then handled by compressed air locomotives and discharged into the hoppers above the furnaces. Under all improved conditions of work in the reverberatories over the old plant the aggregate cost of coal, labor and repairs, has been reduced $1,000 per day. The copper content of the slag produced is 0.4 per cent and of the matte 47.44 per cent.

The matte from the blast and reverberatory furnaces is taken in its molten state to the converter and poured direct into the same. The process of converting is similar to the "bessemerizing" of iron to steel. The sulphur contained furnishes the chief product of combustion combined with a powerful air blast. The iron contained in the matte combines with the silica of the converting is similar to the "bessemrizing" of iron to steel. The sulphur and is skimmed off. This process makes the converter plant the most brilliant, the most active and the most dangerous place at the works.

The converter building is modeled on the modern plan of an open-work clear-story structure with 100 ton traveling electric cranes, that readily handle the slag and matte pots. The converted copper is carried molten across the building and poured into casting furnaces where it is "polled." This is an old process for reducing small quantities of oxides yet present and is accomplished by plunging green poles into the molten copper. The copper is then poured into "cakes" and cooled. These anodes were formerly refined at the large electrolytic refinery in the valley, but the metal is now shipped east for such treatment. The anode copper as shipped from the Washoe works will run about 99.6 in copper and carries some gold and considerable silver. Thus the operations on the ore during the several stages of treatment has resulted in an almost perfect fire concentration of the values.

There are many details of interest and value in these incomparable reduction works that cannot be covered in any single article. Among these no

feature is more obvious than the giant stack, 50 feet in diameter at the base and 300 feet high. This is situated 2,300 feet southwest of the works on a hill 427 feet above the plant. Thus a great volume of smoke composed largely of sulphur compounds is continually being driven off into the atmosphere at this great height. The great stack carries off all the fumes from the blast and reverberatory furnaces and also from the calciners and converters, each of which starts from the building from which it takes its name and unites in a main flue at a point near the general offices of the works.

Other features of magnitude at the Washoe plant include the use of compressed air in furnaces and for surface traction, the saving and re-treating of flue dust, the saving of steam fuel by the harnessing of the reverberatories to the Sterling boilers and the high degree of the purity of the anode copper. Nowhere is there a more complete aggregation of men, machinery and system engaged in the reduction of ores and it is inconceivable that any such system will better serve its day and generation than the Washoe plant.

FERGUS COUNTY.

The values won from the ores of this county were obtained by the cyanide process and consisted of gold and silver of the following quantity and value:

Description—	Quantity.	Value.
Gold, fine ounces	36,737.624	$1,172,870.78
Silver, fine ounces (coining rate)	2,058.66	2,661.70
Total		$1,175,532.48

From the above it may be noted that Fergus County is the second largest producer of gold in the State and that nearly all the contained values are comprised in this metal. This yield originates from the large deposits of low grade ore that have been under attack in this county for a number of years with excellent results. The output shown is a comparatively small increase over that of the previous year.

This indicates but little change in conditions although there is reason to believe that in 1905 properties heretofore not worked extensively will be brought forward and equipped for successful and complete operations. The only method of treatment employed in this county for the extraction of the precious metals is that known as the cyanide process, and involves crushing, leaching of pulp with potassium cyanide and the recovery of values from the solution by precipitation and refining of precipitates.

FLATHEAD AND GRANITE COUNTIES.

The returns during 1904 of precious metals by the mines of these counties were as follows:

Description—	Quantity.	Value.
Gold, fine ounces	4,858.983	$ 100,444.09
Silver, fine ounces (coining rate)	1,402,922.70	1,813,879.86
Lead, fine pounds	747,869.	32,225.68
Total		$1,946,549.63

In Flathead County nearly all the values originate in the Cabinet Mountains to which the town of Libby is the natural gateway. The output consisted entirely of concetrates made from the silver-lead ores, mined and milled by the Rustler Mining and Milling Company, and from placer gold from various gulches.

The yield from Granite County consisted of dore bullion made by the Granite-Bimetallic and Good Hope mining companies, at Philipsburg, from ore mined and treated at the properties belonging to these companies. The yield from the silver ores of the Philipsburg district shows a decreased output from that of 1903, but the variation is only a natural fluctuation that may occur at any time where properties continue working for long periods. The other district of Granite County, where mining was carried on in 1904, is that near Garnet, a small mining camp in the northern part of the county. There the most extensive operations were conducted under the ownership and management of Dr. Peter S. Mussigbrod. Among shippers from this camp were also the Nancy Hanks mine and several small properties.

JEFFERSON COUNTY.

The amounts included in the production of this county in 1904 were as follows:

Description—	Quantity.	Value.
Gold, fine ounces	8,113.305	$167,716.90
Silver, fine ounces (coining rate)	166,635.03	215,447.32
Copper, fine lbs.	161,100.	20,657.85
Lead, fine lbs.	727,200.	31,335 05
Total		$435,157.12

The principal producer of gold ores during the year was the Big Indian mine, in the northern part of the county near the city of Helena. The mill of this company operated on low grade free milling ores mined from ground belonging to a company headed by Allen C. Mason. The output was nearly all gold bullion, with only small values consisting of silver.

Much activity was shown in the mines around Elkhorn, Basin and Wickes. The output of these was principally in silver-lead ores that were shipped direct to the East Helena smelter for reduction.

At Basin the concentrator and smelter erected at the Katy mine some years ago was operated at full capacity on copper ores hauled to this point from Butte for concentration and treatment.

LEWIS AND CLARK COUNTY.

The yield of gold, silver, copper and lead from ores mined in this county during 1904 was as follows:

Description—	Quantity.	Value
Gold, fine ounces	30,696.219	$634,547.16
Silver, fine ounces (coining rate)	72,805.83	223,425.72
Copper, fine pounds	17,067.	2,188.50
Lead, fine lbs.	67,688.	2,916.06
Total		$863,078.06

The increase in the amount of gold over the output for the preceding year was more than 8,000 ounces and of the silver nearly 30,000 ounces. The entire product originated principally in the district of which Marysville is the center, a small amount coming also from the east side of the Missouri river in the vicinity of York.

At Marysville the Montana Mining Company, Limited, were engaged principally in the treatment of tailings belonging to them and stored along Silver Creek. At Gould, the Standard Ore Company completed the erection of a thirty-stamp mill and operated the same steadily throughout the year on ores taken under lease from the Jay Gould mine. At the Bald Butte mine large development was done during the year and with profitable results. The forty-stamp mill belonging to this company was started at the beginning of July and continued the remainder of the year on ores mined by them. At Belmont the Penobscot Mining Company produced values steadily throughout the year, treating their ores as usual by stamp milling and leaching with cyanide solution.

MADISON COUNTY.

Description—	Quantity.	Value.
Gold, fine ounces	41,241.281	$ 852,532.94
Silver, fine ounces (coining rate)	149,058.81	192,722.50
Copper, fine lbs.	15,815.	2,027.96
Lead, fine lbs.	540,682.	23,297.99
Total		$1,070,381.39

The above is a material increase for each metal over the production for the preceding year.

Since the discovery of gold more than forty years ago in Alder Gulch, which is situated in this county, Madison County has led in the production of gold nearly every year until 1903, when Fergus County secured the lead and maintained it in 1904. That the county held this position for so long a period was due to the placers. These latter are becoming exhausted and the future will witness changed conditions as the opening and working of the uartz properties are carried on.

The ore bodies found in this county present a variety of physical features and the metals in different combinations. Gold, however, is universally present. The methods of treatment are also dissimilar, the principal ones being stamp milling, cyaniding, concentrating and smelting.

The Rochester district was the scene of a large production and much energy during 1904. The principal producer was the Watseca mine. This property is equipped with cyanide plant and concentrating mill and its large output consisted of bullion and concentrates.

What is known as the Norris district includes the town of that name situated at the terminus of a branch of the Northern Pacific railroad. The mining region lies south and west of this point, in the vicinity of Richmond flats. The leading property there is the Montana-Revenue mine. In the past considerable tonnages of ore have been taken from this mine and sent to the smelters for sale and treatment, but as the entire output is amenable

to cyande treatment a new mill of seventy-five ton capacity was erected in 1904. There are other properties opened and being worked in this district the ore from which is now sent to the smelters for treatment.

At Pony, the Boss Tweed and Clipper groups were under lease in 1904 to the Elling estate and W. W. Morris, who shipped high grade ore from some of the rich shoots in those properties and also concentrates made at the Strawberry mills from lower grade ores. A large number of small properties and claims were worked during the year in this vicinity.

Probably the most satisfactory work done in Madison County during the year was at the Toledo mine near Sheridan. This property was equipped with a new 150-ton mill to concentrate the ores. Electrical power is supplied to the mill by a 640 horsepower plant run by water a mile distant. The concentrator is equipped with five Wilfley and five Overstrom tables. Near the Toledo mine is the properties of the Montana and St. Paul Mining Company, where a search is being made for the extension of the ore bodies of the Toledo. At the old Leiter mine, a fifty-ton cyanide plant has been erected and is treating the tailings from the ore formerly worked at the mill. In addition to the foregoing there are a number of claims in this district which have produced ore in 1904.

The mining operations at Ruby were conducted by the Conray Placer Mining Company, which handles placer ground by means of specially designed dredges. This company owns four miles of Alder Gulch and expects to have a long period of operations ahead for the dreges belonging to them.

The old placer camp of Virginia City, from which the placer mines of Alder Gulch have been worked since their discovery, is taking on a new life and is now becoming prominent as a quartz district. The largest operations in 1904 were at the Kearsarge mine. The company owning the property equipped it with a sixty-stamp mill, since which time efforts have been directed to secure the cheapest extraction of the ore known to be in their claims. At the Dakota mine and the properties controlled by the Damours Mining Company much activity was displayed.

Other active properties in Madison county during the year 1904 were the Green-Campbell and Lester groups near Silver Star and the Iron Rod mine, near Iron Rod.

SILVER BOW COUNTY.

The distinctive feature of the production in this county for many years has been the enormous amount of copper produced, together with the large amounts of gold and silver credited to Silver Bow County. These originate entirely at Butte where conditions and operations continued with little or no change during 1904 from those experienced in previous years. The quantities and values of these metals in 1904 were as follows:

Description—	Quantity.	Value.
Gold, fine ounces	63,617.922	$ 1,315,099.16
Silver, fine ounces (coining rate)	10,484,654.19	13,555,916.53
Copper, fine pounds	283,070,422.	36,298,120.21
Total		$51,169,135.90

NEW COURT HOUSE, BILLINGS.

The influences that affected the production in Meagher, Missoula, Powell, Park and Ravalli Counties showed little or no change in 1904 from conditions existing in the years immediately preceding.

STATISTICAL TABLES.

These statistical tables of the Montana production during the year 1904 that appear in connection with this review, showing the quantity and value of the production of the State, its origin by counties and classes, together with the final disposition of the ores and bullion for treatment or sale, have been compiled from confidential returns furnished by the producers of their output. The totals thus obtained are verified by the statistics of the United States mints and assay offices and by the summaries furnished from the records of the smelters and refineries:

Origin by Percentages of the Production of Gold and Silver in Montana During the Calendar Year, 1904.

Origin—	Percentage gold.	Percentage silver.
Placer dust	9.39	00.04
Mill bullion	17.52	8.02
Cyanide bullion	28.93	00.65
In copper ores	25.75	65.03
In lead ores	1.24	1.79
In dry ores	17.17	24.47
Total	100.00	100.00

Production of Gold and Silver in Montana During the Calendar Year, 1904.

COUNTIES	GOLD		SILVER		Total Value.
	Fine Ounces.	Value.	Fine Ounces.	Coining Value.	
Beaverhead	2,055.662	$42,494.30	34,639.71	$44,786.69	$87,280.99
Broadwater	6,194.488	128,051.43	56,391.58	72,910.32	200,961.75
Cascade and Chouteau	7,647.104	158,079.67	249,380.80	322,431.74	480,511.41
Deer Lodge	9,947.483	205,632.72	9,180.30	11,869.18	217,502.20
Fergus	56,737.624	1,172,870.78	2,058.66	2,661.70	1,175,532.48
Flathead and Granite	4,858.983	100,444.09	1,402,922.70	1,813,879.86	1,914,323.95
Jefferson	8,113.305	167,716.90	166,635.03	215,447.32	383,164.22
Lewis and Clark	30,696.219	634,547.16	172,805.83	223,425.72	857,972.88
Madison	41,241.281	852,532.94	149,058.81	192,722.50	1,045,255.44
Meagher	333.590	6,895.92	3,011.97	3,894.26	10,790.18
Missoula	3,001.658	62,049.78	3,126.59	4,042.46	66,092.24
Park, Powell and Ravalli	7,054.523	145,829.94	11,966.34	15,471.63	161,301.57
Silver Bow	63,617.922	1,315,099.16	10,484,654.19	13,555,916.53	14,871,015.69
Returns from custom smelters, assay offices and mints impossible to classify by counties, also material in metal stocks and transportation at close of year	5,105.532	105,540.71	1,862 257.40	2,407,767.15	2,513,307.86
Total	246,605.374	$5,097,785.50	14,608,089.91	$18,887,227.36	$23,985,012.86

Deposits at the United States Assay Office, Helena, Mont., During the Calendar Year, 1904.

COUNTIES	GOLD		SILVER		Total Value
	Standard Ounces	Value	Standard Ounces	Commercial Value	
Beaverhead	535.065	9,954.69	141.02	$70.57	$10,025.26
Broadwater	669.320	12,452.43	89.53	44.89	12,497.32
Cascade	26.343	490.10	1.48	.75	490.85
Choteau	2,830.537	52,661.12	200.33	100.33	52,761.45
Deer Lodge	284.218	47,892.42	1,573.86	786.95	48,679.37
Flathead	416.373	7,745.47	20.12	10.06	7,756.53
Fergus	62,486.249	1,162,534.75	2,065.18	1,032.80	1,163,567.55
Granite	1,990.514	37,029.08	454.99	227.62	37,256.70
Jefferson	2,487.005	46,269.80	377.81	189.08	46,458.88
Lewis and Clark	17,318.895	322,211.86	10,184.93	5,092.99	327,304.85
Madison	19,632.816	365,261.60	4,145.43	2,073.03	367,334.63
Meagher	170.655	3,174.98	13.30	6.67	3,181.65
Missoula	2,779.620	51,713.84	140.65	70.45	51,784.29
Park	2,580.854	48,015.89	584.60	292.36	48,308.25
Powell	1,136.473	21,143.69	144.55	72.38	21,216.07
Ravalli	1,049.920	19,533.34	111.22	55.66	19,589.03
Silver Bow	829.440	15,431.46	176.46	88.29	15,519.75
Montana	119,514.097	$2,223,517.55	20,425.46	10,214.88	$2,233,732.43
Alaska	1,325.697	24,664.13	196.81	98.41	24,762.54
Idaho	2,838.363	52,806.66	724.60	362.55	53,169.21
Nevada	2,043.635	38,021.12	811.30	405.72	38,426.84
Oregon	24.741	460.20	15.10	7.55	467.85
Washington	988.781	18,395.93	424.56	212.34	18,608.27
Australia	23.006	428.02	2.06	1.03	429.05
British Columbia	8,157.437	151,766.29	3,685.47	1,842.90	153,609.19
Northwest Territory	22.574	419.98	2.12	1.06	421.04
Jewelry	128.812	2,396.52	31.65	15.88	2,412.40
Re-deposits	280.451	5,217.69	145.73	72.86	5,290.55
Grand Total	135,347.594	$2,518,004.19	26,464.86	$13,235.18	$2,531,329.37

Bullion of Montana Production Deposited at the United States Assay Office Helena, Mont., During the Calender Year 1904.

ORIGIN	GOLD		Silver		Total value
	Standard Ounces	Value	Standard Ounces	Commercial Value	
Placer gold	25,167.315	$ 468,223.92	3,798.72	$1,900.64	$470,129.56
Mill bullion	94,346.782	1,755,288.63	16,626.74	8,314.24	1,763,602.87
Total	119,514.097	$2,223,517.55	20,425.46	$10,214.88	$2,233,732.43

Production of Copper and Lead in Montana During the Calendar Year, 1904.

SUMMARY BY COUNTIES	COPPER	LEAD
	Fine pounds	Fine Pounds
Beaverhead	63,815	84,844
Broadwater	.....	388,698
Cascade	.....	1,472,155
Flathead	.....	747,869
Jefferson	161,100	727,200
Lewis and Clark	17,067	67,688
Madison	15,815	540,682
Powell	30,000	7,200
Silver Bow	283,070,422	.....
Custom smelters in addition to the above not possible to classify by counties	587,111	501,262
Total	283,945,330	4,537,598

Bullion of Montana Production Deposited at U. S. Mints and Assay Offices During the Calendar Year, 1904.

INSTITUTION MINTS	GOLD		SILVER		Total value
	Standard Ounces	Value	Standard Ounces	Coining Value	
Denver, Col.	93.218	$1,734.29	20.30	$23.62	$1,757.91
Philadelphia, Pa.	195.028	3,628.43	165.40	192.47	3,820.90
San Francisco, Cal.	47.540	884.46	8.41	9.79	894.25
Assay Offices—					
Boise, Idaho	1,482.090	27,573.77	462.12	537.74	28,111.51
Helena, Mont.	119,514.097	2,223,517.55	20,425.46	23,767.81	2,247,285.36
New York, N. Y.	3,497.416	65,068.20	17,354.98	20,194.88	85,263.08
St. Louis, Mo	963.248	17,920.89	309.89	360.60	18,281.49
Total	125,792.637	$2,340,327.59	38,746.56	$45,086.91	$3,385,414.50

Disposition of the Gold and Silver of Montana Production During Calendar Year, 1904.

DISPOSITION	GOLD		SILVER		Total value
	Fine Ounces	Value	Fine Ounces	Coining Value	
Deposited at the U. S. Mints and Assay Offices	113,213.374	$2,340,327.59	34,871.90	$45,086.91	$2,385,414.50
Shipped to custom smelters and refineries by producers	133,392.000	2,757,457.91	14,573,218.00	18,842,140.45	21,599,598.36
Total	246,605.374	$5,097,785.50	14,608,089.91	$18,887,227.36	$23,985,012.86

PRODUCTION FOR THE YEAR 1905.

Of the mineral production for the year 1905 Mr. Tatem says:

The quantities and values of precious metals won in Montana during the calendar year 1905 from the ores and gravels mines and treated by the various methods of reductions were as follows:

Description—	Quantity.	Value.
Gold, fine ounces	236,516.687	$ 4,889,233.84
Silver, fine ounces (coining rate)	13,454,651	17,395,912.40
Copper, fine pounds, at $15.590 per cwt	308,949,818	48,165,276.63
Lead, fine pounds, at $4.707 per cwt	4,826,014	227,160.48
Total		$70,677,583 35

These figures when compared with corresponding data for the previous year (1904) show the following changes in each of the several metals:

METALS	1904		1905		Increase or Decrease
	Quantity	Value	Quantity	Value	
Gold, fine ounces	246,605	$5,097,785	236,517	$4,889,234	*$ 208,551
Silver, fine ounces, (coining rate)	14,608,089	18,887,227	13,454,651	17,395,912	*1,491,315
Copper, fine pounds	283,945,330	36,410,311	308,949 818	48,165.277	11,754,967
Lead, fine pounds	4,537,598	195,525	4,826 014	227,161	31,635
Totals		$60,590,848		$70,677,584	$10,086,736

* Decrease

The output for 1905 was the largest in aggregate value that has been produced by the mines of Montana in any calendar year and is due, not only to an increase in the actual production over the preceding year as noted in the quantity of copper and lead, but rather to the higher market price for these two metals in 1905, the production of copper being the most important feature of Montana's mining industry. The average market price for copper in 1904 was $12.832 per hundred pounds (electrolytic) while in 1905 this was advanced to $15.590 per hundred pounds.

The increase in 1905 is equivalent to more than 16 per cent over the aggregate value of the output for 1904. Although Montana ranks among the most important of the states that produce precious metals it is this actual advance from time to time that enables it to maintain this prominence.

The foregoing figures will also explain to even a casual observer the activity of Montana properties in the mining and financial centers of the world during 1905. Data is not obtainable to show the amounts that were invested during the year to purchase, develop and work Montana mines but the statement can safely be made that it was fully as great as in any preceding year. The result is already most noticeable in the prospecting and developing now under way in the vicinity of Butte and in the other districts of the State.

Probably as great an incentive as the actual output and earnings of the mines to these investments was a greater realization in 1905 than before that

there is a minimum of danger from labor troubles in Montana. The past is a criterion for the future. This has been remarkably free from such troubles and the present good feeling between mine employer and mine employe in Montana is a happy guarantee that the past harmony will continue.

The amounts of gold and silver taken in 1905 from the placers, those derived by the milling and by the cyaniding of gold and silver ores, and those saved by the smelting of copper and of lead and dry ores and concentrates were as follows:

ORIGIN	GOLD		SILVER		Total Val
	Fine Ounces	Value	Fine Ounces	Coining Value	
From placers	20,286,210	$419,353.17	2,807.00	$3,629.34	$422,982.41
In mill bullion	17,182,477	355,193.89	580,963.00	751,144.09	1,106,337.98
In cyanide bullion	84,591,000	1,748,651.16	128,189.00	165,739.33	1,914,390.49
From copper ores	69,415,000	1,434,935.40	11,400,638.00	14,740,218.82	16,175,154.22
From lead and dry ores and concentrates	45,042,000	931,100.22	1,342 054.00	1,735,180.92	2,666,281.14
Total	236,516,687	$4,889,233.84	13,454,651.00	$17,395,912.40	$22,285,146.24

Within the past decade a remarkable change is found in the origin of the gold bullion produced in the state. Ten years ago the gold bullion came from the stamp mills and little or nothing was produced by the use of cyanide in the treatment of gold ores. It may be noted above that at this time the amount of gold bullion produced by the stamp mills is comparatively insignificant while that from ores treated with cyanide is in the front rank. This transition has been gradual and uniform so that the total output of gold has varied but little during their period. The decrease of the one has been offset by the increase of the other. This treatment of ores with cyanide, however, but little affects the quantity of silver produced. The advent of the cyanide process also has been principally in districts where stamp milling was not formerly employed.

The quantities of gold and silver won from the several other sources show but small changes in recent years and are the natural outcome of conditions attendant upon the industry.

The closing months of 1905 witnessed the opening of negotiations that subsequently resulted in the purchase of the Heinze holdings in Butte's copper mines by interests friendly to the Amalgamated Copper Company, the holding corporation of the leading mines then working at Butte, except the Clark properties. As a result, the litigation that has long been carried on in the State and Federal courts between these interests has been ended so that ground heretofore in controversy is available for the mining of the ore bodies therein. The year 1906 will therefore witness the fullest possible extraction of Butte ore that can be handled by the reduction plants belonging to the several companies. New corporations that have been formed are already opening the virgin ground in Butte and if these prove successful

in their quest will install reduction works of their own. Large capital is available for this development.

Before passing to further details in this review of the production of precious metals in Montana, it may not be amiss as a resume to say that the total amount of ore mined during 1905 was five million tons from which $70.000,000 was taken, and that capital is available for and labor conditions are favorable to a large increase in this output during the coming year and in the future.

By reference to the tables that are a part of this report and making a comparison with the preceding and corresponding report for Montana (1904) it would be found that there were only minor increases or decreases in the output of precious metals in the several counties. The most marked change is in Granite County, where the mines and mills of the Granite-Bi-Metallic Mining company are located and which were closed down. These properties have always been silver mines and their output of this metal has been the largest by this class of mines. After their long period of operation the closing of these properties is due to causes other than the silver market.

In order to cheapen the cost of production and reduction of Butte ores a second dam is being built across the Missouri river near Helena to furnish electrical power for those mines and smelters. This dam is of steel and concrete construction and when completed will furnish 10,000 horse power additional to the Butte district.

Another object of importance to mining in Montana will be the advent of the Chicago, Milwaukee & St. Paul Railroad. This system will cross the State from the east to the west and will enter necessarily districts now idle because without transportation facilities. The Burlington and Great Northern systems are also planning new lines to parts of the State not yet reached. The ultimate influence of these railroad extensions will be to increase the metal production of the State in the future.

The principal development carried on in Butte during 1905 was in the nature of deeper exploration. This has been successful in showing that the veins of that camp are larger and of higher grade than above and confirms the belief heretofore held that the extent of these copper deposits will not be determined for a long future period.

As a further insight into this development of the Butte copper veins and because of its general interest and bearing on the subject of the production of precious metals in Montana the following extract from the annual report for 1905 of John D. Ryan, president of the Anaconda Copper Mining Company, is most valuable. Mr. Ryan says:

"The mines, reduction works and subsidiary departments were in continuous operation during the year, and no unusual accident or extraordinary interruption occurred to interfere with regular work.

"The mines were developed during the year to greater depths than have been reached heretofore in the Butte district, and with the increased depths the life of the mines and grade of the ore are assured for many years to come.

"The Anaconda mine is now opened on the 2,400-foot level and the Never

Sweat and St. Lawrence on the 2,200, and at these depths the veins show fully as good in size and in value of ores as in any of the levels below the 1,000-foot.

"The mining properties owned by the company outside of the working mines have been developed to a considerable extent during the year with satisfactory results, and it is the policy of the management to continue, especially during prosperous times, active work in developing the large holdings of the company that are not now productive.

"The arrangement under which the company leased the new reduction works of the Washoe Copper Company and abandoned and dismantled its own reduction works at Anaconda has been in effect long enough now to demonstrate fully the wisdom of the trustees in entering into it.

"During the year 1901, which was the last full year during which the company operated the old reduction works, 1,390,460 tons of ore were treated, and the capacity of the plant as it stood was reached; to modernize the plant and increase its capacity was decided by competent engineers to be impracticable.

"The new works of the Washoe company were leased for a long term of years on a reasonable rental basis, which rental covers only interest on the amount the plant cost with usual allowance for depreciation.

"During the year 1905 1,626,460 tons of ore from its own mines, and slags, slimes and flue dust taken from the old works were treated at the new reduction works at a difference, after paying rental of $1,5886 per ton in increased savings of metal values and decreased costs as compared with the old works in the last year of their operation. This saving amounts to $2,583,549.71 on the ore treated for your company during 1905.

"In addition to the advantages of increased savings and decreased costs realized under the new arrangement there has been recovered in salvage and from metal values in the dumps of the old works since they were abandoned $3,645,625.28 net profits to March 1, 1906, and the cupreous material yet in sight at the old works is estimated at about $1,750,000, or with net profit already realized about eighty-five per cent of the book value of the old works when they were in operation. Included in the book value of the old works is the refinery plant, which still stands intact and ready for operation; but the company does not continue its operation as contracts have been made with refineries at seaboard that make it more profitable to ship the product and have it refined at the seaboard than to refine it at Anaconda.

"Summing up, your trustees find they have realized for your company from the arrangement made with the Washoe Company for the lease of the new reduction works an additional profit amounting to a very large sum each year on the output of the mines, and have recovered practically the entire value of the old works in selling off machinery and working over the slag dumps and slime ponds that could not be worked profitably in the old works.

MINES.

"The mines in operation during the year were the Anaconda, Never Sweat, St. Lawrence, Mountain Consolidated, Bell, Diamond and High Ore; the Gallatin and J. I. C. were opened and operated and a limited tonnage taken from them in the latter half of the year.

"The mines of the company produced 1,543,316 wet tons of ore, of which 61,149 dry tons of smelting ore remained on hand at the reduction works at the close of the year, leaving 1,470,649 dry tons treated at the works.

"The plants and equipment at all of the mines of the company are capable of doing the work satisfactorily and economically for a long future. The use of electrical power has largely increased and will continue to increase at the mines, effecting a very considerable saving over power generated with coal. At the present time most of the air compressing machinery is electrically driven, and it is contemplated to do most of the pumping from the mines with electric power.

"The mines of the company are now drained almost entirely through the pumping plant in the High Ore shaft, and the precipitating plant, through which the water from the mine is taken, extracted during the year sufficient copper to pay all pumping expenses.

"During the year the Anaconda shaft has been sunk 400 feet and crosscuts completed to the veins on the 2,200 and 2,400-levels; the Never Sweat shaft has been sunk to the 2,400-foot level and crosscut completed and the vein opened on the 2,200-foot level; the St. Lawrence shaft has been sunk to the 2,000-foot level (equivalent to the 2,200 Anaconda) and crosscuts driven to the vein on that level; the High Ore shaft, now at the 2,200-foot level, is being sunk and will be continued to a depth equal to that of any of the company mines; the Diamond and Mountain Consolidated shafts are both opened to the 2,200-foot level and have not been added to in depth during the year.

REDUCTION WORKS.

"The reduction works treated for all companies during the year 2,650,868 tons or ore and other cuprous material; of this, 1,470,694 tons of ore from the mines, 44,566 tons of slime, 23,900 tons of flue dust, 82,789 tons of slag, and 4,357 tons of miscellaneous cleanings from the old works were treated for your company from which there were produced 95,443,730 pounds of fine copper, 3,116,880.945 ounces of silver and 19,164.429 ounces of gold in the form of anodes which were shipped to eastern refineries.

"During the year the Washoe Copper Company added to the blast furnace capacity of the works by making connections between furnaces and reconstructing the plant so that three large furnaces and one small one are now in operation, with a daily capacity of 4,700 tons of all materials, as against seven small furnaces with a daily capacity of 2,700 tons at the beginning of the year. Eight new McDougal roasting furnaces were added in the calcining plant and it is intended by the Washoe Company to still add more roasters, as the present product of the concentrator is greater than can be satisfactorily handled with the present capacity. The small reverberatory furnaces

have all been replaced with large ones and the reverberatory plant now consists of two furnaces 102 feet, four 112 feet and one 115 feet long, with boilers in the flues of all the furnaces furnishing steam about sufficient to operate the smelter power house.

"The concentrator is being equipped with electric power which will show a material decrease in the cost of operating when installed.

"These extensions and improvements are being made by the Washoe Copper Company, and your company will pay increased rental based on the increased cost of the plant.

"The flues and stack which were built in 1903 at a cost of $725,000 to recover flue dust have proven profitable to the company and of great benefit to the works in recovering the very large part of the dust that formerly went into the atmosphere, and which resulted in large expenditures by the company in settlement of damage claims made by the farmers in the Deer Lodge Valley. There were recovered during the year 1905 61,016 tons of flue dust from which metals and arsenic in large quantities were extracted. The arsenic plant has been in successful operation during the whole of the year and its product found a ready market at good prices."

The following statistical tables of Montana production, showing the quantity and values of the precious metals, their origin by counties, and from the several classes of ores, together with the final disposition of the ores and bullion, have been assembled from confidential returns furnished by the producers. These totals have been verified by comparison with totals made from figures and data furnished by the United States mints and assay offices and by the smelters and refineries that handled the Montana output during 1905.

Production of Gold and Silver in Montana During the Calendar Year, 1905.

COUNTIES	GOLD		SILVER		Total Value
	Fine Ounces	Value	Fine Ounces	Coining Value	
Beaverhead	122.671	$2,535.83	48,172.81	$62,284.04	$64,819.87
Broadwater	5,842.864	120,782.71	54,859.92	70,930.00	191,712.71
Carbon-Meagher	75.600	1,562.79	9.26	11.97	1,574.76
Cascade	153.584	3,174.86	422,467.17	546,221.47	549,396.33
Chouteau	8,640.167	178,608.10	6,680.51	8,637.43	187,245.53
Deer Lodge	9,258.177	191,383.51	6,333.28	8,188.48	199,571.99
Fergus	60,869.267	1,258,279.42	2,580.17	3,335.98	1,261,615.40
Flathead	1,101.059	22,760.72	29,905.12	38,665.11	61,425.83
Granite	7,247.305	149,815.12	726,505.48	939,320.22	1,089,135.34
Jefferson	8,911.840	184,224.08	462,785.52	598,348.95	782,573.03
Lewis and Clark	30,660.141	633,801.36	170,412.12	220,330.80	854,132.16
Madison	36,406.950	752,598.45	135,231.90	174,845.28	927,443.73
Missoula	2,403.605	49,686.93	5,962.15	7,708.54	57,395.47
Powell	2,965.504	61,302.41	19,807.09	25,609.07	86,911.48
Park	3,437.814	71,065.93	1,268.74	1,640.39	72,706.32
Ravalli	403.218	8,335.26	67.08	86.63	8,421.89
Silver Bow	58,016.929	1,199,316.36	11,361,602.00	14,689,748.04	15,889,064.40
Totals	236,516.687	$4,889,233.84	13,454,651.32	$17,395,912.40	$22,285,146.24

Deposits at the United States Assay Office, Helena, Mont., During the Calendar Year, 1905.

COUNTIES	GOLD		SILVER		Total Value
	Standard Ounces	Value	Standard Ounces	Commercial Value	
Beaverhead	128.523	$2,391.12	14.23	$7.58	$2,398.70
Broadwater	834.295	15,521.74	148.73	79.42	15,601.16
Cascade	3.982	74.08	.19	.10	74.18
Carbon	4.076	75.83	.23	.12	75.95
Chouteau	6,044.630	112,458.21	4,089.46	2,079.58	114,537.79
Deer Lodge	362.419	6,742.68	48.09	38.94	6,781.62
Fergus	58,485.986	1,088,111.26	2,461.31	1,289.37	1,089,400.63
Flathead	341.412	6,351.84	16.39	8.81	6,360.65
Granite	542.047	10,084.59	112.28	59.68	10,144.27
Jefferson	1,147.001	21,339.52	186.84	96.38	21,435.90
Lewis and Clark	14,942.666	278,003.02	7,930.24	4,189.00	282,192.02
Madison	18,083.414	336,435.52	3,452.03	1,811.45	338,246.97
Meagher	79.924	1,486.95	10.05	5.56	1,492.51
Missoula	2,645.950	49,226.96	104.86	55.37	49,282.33
Park	3,819.793	71,065.88	1,409.71	736.39	71,802.27
Powell	2,002.693	37,259.39	217.66	99.31	37,358.70
Ravalli	448.020	8,335.25	74.53	38.33	8,373.58
Silver Bow	1,846.155	34,347.05	376.49	196.31	34,543.36
Montana	111,762.986	2,079,310.89	20,653.32	10,791.70	2,090,102.59
Idaho	918.658	17,091.26	213.57	112.51	17,203.77
Washington	942.807	17,540.58	296.67	159.50	17,700.08
Oregon	50.228	934.48	19.46	10.39	944.87
Nevada	3,949.109	73,471.76	1,423.00	753.37	74,225.13
Alaska	2,246,138	31,788.60	364.22	186.41	41,975.01
British Columbia	4,525,665	121,407.67	1,727.21	907.37	122,315.04
Jewelry	48.581	903.83	12.61	6.66	910.49
Re-deposits	509.161	9,172.76	508.78	254.70	9,727.46
Grand Total	126,953.333	$2,361,921.83	25,228.84	$13,182.61	$2,375,104.44

Bullion of Montana Production Deposited at United States Assay Office, Helena, Mont., During the Calendar Year, 1905.

ORIGIN	GOLD		SILVER		Total Value
	Standard Ounces	Value	Standard Ounces	Commercial Value	
Placer gold	22,540.230	$419,352.91	3,119.91	$1,634.48	$420,987.39
Bullion from stamp mills and cyanide plants	89,222.756	1,659,957.98	17,533.41	9,157.22	1,669,115.20
Totals	111,762.986	$2,079,310.89	20,653.32	$10,791.70	$2,090,102.59

Bullion of Montana Production Deposited at the United States Mints and Assay Office During the Calendar Year, 1905.

INSTITUTION MINTS	GOLD		SILVER		Total Value
	Standard Ounces	Value	Standard Ounces	Coining Value	
Philadelphia, Pa.	374.444	$6,966.40	803.77	$935.30	$7,901.70
Denver, Col	4.093	76.15	.84	.98	77.13
San Francisco, Cal.	20.564	382.59	3.06	3.56	386.15
Assay Offices.					
Helena, Mont.	111,762.986	2,079,310.89	20,653.32	24,032.95	2,103,343.84
New York, N. Y.	6,740.762	125,409.52	26,898.48	31,300.05	156,709.57
Seattle, Wash.	140.448	2,612.99	39.46	45.92	2,658.91
Boise, Idaho	1,122.473	20,083.22	134.49	156.50	21,038.72
Total	120,165.770	$2,235,641.76	48,533.42	$56,475.26	$2,292,117.02

Disposition of the Gold and Silver of Montana Production During the Calendar Year, 1905.

DISPOSITION	GOLD		SILVER		Total Value
	Fine Ounces	Value	Fine Ounces	Coining Value	
Deposited at the U. S. mints and assay offices	108,139.193	$2,235,435.51	43,680.00	$56,475.15	$2,291,910.66
Shipped to custom smelters and refineries by producers	128.377.494	2,653,798.33	13,410,971.00	17,339,437.25	19,993,235.58
Totals	236,516.687	$4,889,233.84	13,454,651.00	$17,395,912.40	$22,285,146.24

Origin by Percentages of the Production of Gold and Silver in Montana During the Calendar Year, 1905.

ORIGIN	Percentage Gold.	Percentage Silver
From placers	8.58	00.02
As mill bullion	7.23	4.32
As cyanide bullion	35.76	00.91
From copper ores	29.37	84.76
From lead ores, dry ores and concentrates	19.06	9.99
Totals	100.00	100.00

Production of Copper and Lead in Montana During the Calendar Year 1905.

COUNTIES	Copper, Fine lbs.	Lead, Fine lbs.
Beaverhead	114,600	174,009
Broadwater	63,414	529,559
Cascade	.....	830,410
Flathead	.....	1,415,691
Granite	8,000	98,687
Jefferson	168,000	823,800
Lewis and Clark	14,300	125,540
Madison	23,114	243,308
Missoula	68,870	32,480
Powell	.....	141,200
Silver Bow	308,489,520	.....
Montana lead received at custom smelters impossible to classify above..	.....	411,330
Totals	308,949,818	4,826,014

Production of Gold, Silver, Copper and Lead in the State of Montana From the Year 1862 to 1905 Inclusive.

YEAR	Gold	Silver**	Copper	Lead	Totals	Yearly Inc.
1862 to 1881	$200,000,000	$ 11,000,000	.....	.....	$211,000,000	.....
1882	2,550,000	4,370,000	1,539,860	.....	8,459,860	.....
1883	1,800,000	6,000,000	3,452,960	226,424	11,479,384	57½
1884	2,170,000	7,000,000	5,386,500	246,326	14,802,826	31
1885	3,400,000	11,500,000	6,779,800	274,350	21,954,150	50
1886	4,422,000	13,849,000	5,761,200	494,132	24,526,332	12
1887	5,978,536	17,817,548	8,853,750	607,662	33,257,496	33½
1888	4,200,253	15,790,736	15,103,946	569,160	35,664,095	7½
1889	3,500,000	19,393,939	13,334,970	456,975	36,685,884	3
1890	3,300,000	20,363,636	16,656,437	675,392	40,995,465	11½
1891	2,890,000	20,139,394	14,377,336	1,229,027	38,635,757	5*
1892	2,891,386	22,432,323	19,105,464	990,035	45,419,208	18
1893	3,576,000	21,858,780	16,630,958	964,089	43,029,827	5*
1894	3,651,410	16,575,458	17,233,718	730,551	38,191,137	11*
1895	4,327,040	22,886,992	21,114,869	754,360	49,083,261	28½
1896	4,380,671	20,324,877	25,356,541	670,010	50,732,099	3½
1897	4,496,431	21,730,710	26,798,915	928,619	53,954,675	6
1898	5,247,913	19,159,482	25,102,616	809,056	51,319,067	5*
1899	4,819,157	21,786,835	40,941,906	909,410	68,457,308	38
1900	4,736,225	18,482,211	39,827,135	701,156	63,746,727	9*
1901	4,802,717	18,334,443	36,751,837	498,622	60,387,619	5*
1902	4,400,095	17,622,285	24,606,038	332,749	46,961,167	22*
1903	4,590,516	17,097,702	28,200,692	387,445	50,276,355	7
1904	5,097,786	18,887,227	36,410,310	195,525	60,590,848	17
1905	4,889,234	17,359,912	48,165,277	227,160	70,677,583	16
Total	$296,117,370	$421,799,490	$498,493,035	$13,878,235	$1,230,288,130	

* Decrease. ** Coining value.
No annual compilations were made prior to 1881.

COAL.

STATISTICS FOR 1904.

The total production from 34 properties in 1904 was 1,435,,917 short tons, valued at $2,466,463, an average selling value at the mines of $1.72 per ton as compared with $1.62 per ton for 1903, $1.47 for 1902, $1.54 in 1901, $1.40 in 1900 and $1.89 in 1895.

The yield from nine mines was 1,340,649 tons, the balance being divided among the other 25, none of which produced as much as 10,000 tons. Increased production over 1903, 117,368 tons.

There were 99,807 tons of coal converted into 41,495 tons of coke, valued at $280,745, an average value at the ovens of $6.76, selling price. It required 2.41 tons of coal to make one ton of coke.

The amount paid to labor was $1,990,887, an average of $1.39 per ton of coal mined, but this included dead work as well, on which there was spent by two properties $250,000. There were 57 mining machines in use.

The amount invested in acquisition, development, buildings, machinery, etc., was $6,611.514 for the 34 productive mines, as compared with $5,567,200 for the 48 operated properties in 1903.

STATISTICS FOR 1905.

Forty-eight mines report a production of 1,759,560 short tons for the year 1905. The product of nine properties amounted to 1,790,992 tons. Thirty-seven properties produced less than 10,000 tons each.

The selling value at the mine of this product was $3,218,655, an average per ton of $1.83, an increase of 21 cents over the former year. The increased yield over the former year was 323,643 tons. Twenty-three mines, either visited or communicated with, mined no coal during the year. Also, several others are known to be inactive.

There were 79,352 tons of coal converted into 31,481 tons of coke having a value of $211,350. An average of 2.52 tons of coal were consumed in the manufacture of a ton of coke.

There was an average of 2,213 men employed when the mines were in operation. The amount paid to labor, including development, was $2,080,763, being $1.18 per ton of coal mined. However, this includes, besides the development work ordinarily carried on by the producing mines, more than $150,000 which was expended by a single unsuccessful property.

COAL

Production of Coal and Coke for Year Ending December 31, 1904.

COUNTY	Estimated Capital Invested	Amount Paid for Labor, All Classes, Including Development	Tons of Coal Sold Including to Employees	Tons of Coal Used for Coke	Tons of Coal Used at Mine	Total Production Tons	Total Value at Mine of all Coal Produced	Tons of Coke Produced	Value of Coke at Ovens	Number of Ovens in Operation	Total Number of Days Ovens Were Operated
Carbon	$2,935,000	$603,760	515,499	.....	21,742	537,241	$785,612	.....	.....	.....	.....
Cascade	1,143,500	769,879	670,764	15,093	6,064	691,921	1,162,513	5,911	38,680	65	180
Chouteau	24,000	17,283	7,600	.....	.....	7,600	19,300	.....	.....	.....	.....
Custer	7,000	12,500	10,000	.....	.....	10,000	20,000	.....	.....	.....	.....
Dawson	1,800	825	500	.....	.....	500	700	.....	.....	.....	.....
Fergus	95,000	52,874	17,962	.....	300	18,262	48,692	.....	.....	.....	.....
Gallatin	1,105,214	264,174	62,506	35,772	10,855	109,133	239,370	6,793	40,528	35	200
Meagher	1,000	200	50	.....	.....	50	150	.....	.....	.....	.....
Park	1,300,000	269,392	6,410	48,942	5,858	61,210	190,125	28,791	201,537	150	175
Total	$6,611,514	$1,990,887	1,291,291	99,807	44,819	1,435,717	$2,466,463	41,995	$280,745	250	555

Production of Coal and Coke for Year Ending December 31, 1905.

Carbon	2,909,000	615,819	623,869	.....	25,797	649,666	1,065,561	.....	.....	.....	.....
Cascade	1,117,000	975,606	833,468	.....	27,131	860,899	1,581,704	.....	.....	.....	.....
Chouteau	27,500	12,475	7,675	.....	.....	7,675	21,575	.....	.....	.....	.....
Custer	5,000	13,489	10,784	.....	.....	10,784	21,578	.....	.....	.....	.....
Fergus	72,537	36,198	17,257	15	.....	17,272	47,698	.....	.....	.....	.....
Gallatin	301,048	156,698	118,880	.....	6,000	124,880	219,420	.....	.....	.....	.....
Granite	1,200	1,273	500	.....	.....	500	2,000	.....	.....	.....	.....
Meagher	1,000	112	100	.....	.....	100	500	.....	.....	.....	.....
Park	1,376,500	268,802	5,843	79,337	2,104	87,284	258,019	31,481	211,350	185	150
Valley	2,000	300	500	.....	.....	500	800	.....	.....	.....	.....
Total	5,812,785	2,080,763	1,619,176	79,352	61,032	1,759,560	$3,218,655	31,481	$211,350	185	150

The amount estimated to represent the investment in the total working properties for acquisition development, buildings, machinery and all other outlays of this character was $5,812,785.

According to the United States Geological Survey, most of the coal of Montana is of Cretaceous age. Coal bearing formations are found in all rocks from the Jurassic to the Tertiary. The coal found in the Jurassic, however, is too thin to be profitably worked. The coals of Montana vary in character, from lignite to bituminous, some of the latter being fair coking coals. The total area of Montana underlain by coal is estimated at 32,000 square miles. The producing areas are in somewhat widely separated fields, among which may be mentioned the Bull Mountain field, northeast of Billings, where a considerable amount of prospecting and development has been done. The coal of this field is lignitic in character. In the Clark Fork field, in the southwestern portion of Yellowstone and northeastern part of Sweetgrass counties, and extending southwestward through Carbon County, the coal is lignitic and not at present worked to any large extent. The Rocky Fork field, in Carbon County, contains five different beds of coal, varying in thickness from 4 feet to 7 feet 9 inches. All of this coal is between lignite and bituminous, and said to make an excellent steam and domestic coal. The Yellowstone field and the Trail Creek field are located in Park and Gallatin counties, and cover the operations in and around Bozeman and Livingston. The Cinnabar field is a small area lying just north of the Yellowstone National Park, and west of this are the West Gallatin and Ruby Valley fields, which have not yet been developed to any extent. Other areas are the Toston, Smith River, and Belt, or Great Falls fields, the last mentioned being the most important. Some of the largest mines in the State are those at Cottonwood, in Cascade County. Carbon County, the second in importance in the State, produced a little less than one-third of the total output in 1905 and contributed about 15 per cent of the increase.

The coal mining industry of Montana has, according to the records, just entered the second quarter century of its history. So far as known, the first coal produced in the State, or Territory, as it was then, was mined in 1880, in which year the production amounted to 224 tons. It was not until 1889, however, that the industry assumed any importance, the production increasing nearly 800 per cent, from 41,467 short tons in 1888 to 363,301 short tons the following year. During the next six years development rapidly advanced, until in 1895 it exceeded 1,500,000 tons. Since that date the annual production has remained comparatively steady.

The more important features of the results of tests made by the United States Geological Survey coal testing plant at St. Louis, from a car sample of No. 4 washed nut, sub-bituminous coal from a Red Lodge mine are briefly summarized below.

Chemical Analysis.

Proximate	Moisture	11.05
	Volatile matter	35.90
	Fixed Carbon	42.08
	Ash	10.97
Ultimate	Sulphur	1.73
	Hydrogen	5.37
	Carbon	59.08
	Nitrogen	1.33
	Oxygen	21.52
Calorific value determined:		
	Calories	5,855
	British thermal units	10,539

Producer-gas test: Dry coal consumed per electrical horsepower per hour, 2.25 pounds.
Briquetting test: *Briquets were made with hard pitch and with soft pitch as binder.

Jesse P. Rowe, Ph. D., professor of physics and geology at the University of Montana, Missoula, has made a most exhaustive study of the coal and lignite deposits of the State, the results of which have been published for free distribution in Bulletin No. 37. Prof. Rowe says of the general plan of this bulletin that it "will discuss briefly the various coal fields of the United States, their geology, extent and kinds of coal found in each. Second, the general geology of Montana and a short discussion on the geology of Montana coals and lignites; this to be followed by a careful discussion of the various coal fields found in Montana, their geology, etc., and afterwards the deposits of each county in the State, taken up in detail with cuts of washers, tipples, mines, outcrops, etc., and analyses of the various coal products. The final pages will contain the calorific tests, boiler efficiencies and marketable values. The output by counties of coal, lignite and coke—the chemical analyses in tabulated form, a chapter on briquetting lignites, one on Montana coke and another on the laws pertaining to coal mining claims of Montana. The last page will be a bibliography of Montana coal and lignite deposits."

The author's conclusion is "that the coal and lignite deposits of this 'Treasure State' are destined to play an important part in the upbuilding and material progress of this great country. It has partially solved the light question in many of the plains counties, as in most of the small towns electricity is generated by using lignite as the steam fuel. There are many good clay beds in Montana awaiting development. Many of these could be worked and their products burned, by the use of nearby coal and lignitic fuel. Vast beds of gypsum and almost mountains of good limestone now lying idle could easily be turned into commercial products by the use of neighboring beds of coal. The coal mining industry is still young in this State, but with the settlement of the vast unoccupied areas of her land, the value of this natural product will gradually be forced upon the minds of her people.

"The importance of the lignite has been shown by recent experiments, conducted by the United States Geological Survey, at St. Louis. The experiments of the survey show that when lignite is used to manufacture gas, and it is a good yielder of gas, it will produce as much, if not more, heat per pound, than the best bituminous coal."

LIBRARY BUILDINGS.

1. GREAT FALLS. 2. HELENA. 3. BOZEMAN 4. KALISPELL. 5. ANACONDA.

He quotes Storrs of the United States Geological Survey as estimating "an area of about 13,000 square miles of anthracitic, bituminous and lignitic-bituminous coals. The lignite areas, including the Cretaceous and Tertiary, will undoubtedly," he thinks, "aggregate more nearly 50,000 square miles, than the area heretofore given of 25,000. The bituminous area of Montana exceeds the combined bituminous areas of North Dakota, South Dakota, Wyoming, Utah and New Mexico; and is only exceeded, in the Rocky Mountain states, by Colorado. Her lignite area is next to that of North Dakota, and exceeds the combined lignitic areas of all the other states of the Rocky Mountains.

"All but three counties, Silver Bow, Sanders and Jefferson, have coal or lignite deposits, as soon as developed, of commercial value. Few states can boast of such a distribution of natural fuel. In the eastern part of the state the ranchers, and towns people as well, burn nothing but lignite. Any one living on the plains and desiring a load of fuel, simply drives to his favorite, nearby lignite seam, and procures it. This is indeed a blessing. No timber to speak of within miles, and oftentimes remote from a railroad, the people are permitted to live and develop this great country without worry, and but little trouble in securing the much needed article in the development of every country—fuel."

He quotes Storrs, Wilder and others as saying that "the Montana bituminous coals compare in efficiency, quite favorably with the bituminous coals from the Central and Eastern states. A bituminous coal from Pennsylvania was taken as the standard and the actual evaporation at working temperature and pressure from stationery boiler tests was 6.83 pounds. The evaporation from and at 212 degrees F. was 8.17 pounds. A coking variety of coal from Aldridge was taken and had a relative efficiency in comparison with the above of 100 per cent. A bituminous variety from Livingston-Bozeman had a relative efficiency of 84.6. The Rocky Fork coals (Red Lodge) had a relative efficiency of about 95. Clarks Fork coals, 78.3. The plains lignite, near Miles City, had a relative efficiency of 60.5.

"The tests from the locomotives are somewhat lower than the stationary tests, with the exception of the plains lignite, which was higher from 10 to 12 per cent."

Prof. Rowe's treatment of this subject is so replete with facts of a detailed character that are of such pertinent interest to the people of the State as well as to investors and intending settlers as yet on the outside, that the Commissioner is impelled to make the following liberal quotation from the bulletin to the end of this chapter:

GEOLOGICAL FORMATIONS IN MONTANA.

Geologically speaking, Montana is one of the best states in the Union. All of the periods are shown at some locality and several are well represented. "The eastern portion of the State is a continuation of the broad trans-Mississippian plains stretching northward along the base of the Rocky Mountains and extending far into Canada. The western part is a complex of moun-

tain ranges where the folding and faulting has reached a high development. The eastern part belongs to the great interior area of the Cretaceous."

While the mountainous portions of the State exhibit strata from the Archaean up, the Silurian, Devonian and Carboniferous are well shown from many localities as well as are also the Triassic and Jurassic. The Neocene Lake beds are scattered chiefly over that portion of the State west of the Rocky Mountains, especially in Missoula, Ravalli, Granite, Powell, Beaverhead and Flathead Counties. The Smith River Valley principally in Maegher County is also Neocene.

The following shows the location of a few geological formations in Montana, with some of the characteristic fossils in each:

Periods.		LOCALITIES.	CHARACTERISTIC FOSSILS.
Pleistocene		Most Northern and Mountainous Counties.	Elephas primigenius.
Neocene		Near White Sudphur Springs, Meagher Co. Near Missoula, Missoula Co Near Stevensville, Ravalli Co. Near New Chicago, Granite Co. Near Dillon, Beaverhead Co. Near Toston, Broadwater Co.	Mesohippus. Sequoia longsdorfii. Sequoia n. sp. Alnus. Populus balsamoides. Taxodium occidentalis.
Fort Union		Near Miles City, Custer Co. Near Livingston, Park Co. Near Melville, Sweetgrass Co.	Many leaves in Sandstone, such as the Oak, Ivy, Willow, Chestnut, Laurel, etc.
Laramie		Near Bear Creek, Carbon Co., and many outcrops are found in Granite, Fergus, Meagher, Sweetgrass, Yellowstone, Gallatin, Park, Madison, Valley, Chouteau, Dawson, Teton, Custer, Rosebud and Beaverhead Counties.	Viviparus retusus. Viviparus trochiformis. Campeloma multi lineata. Unio. Leaves in red shale such as Quercus (Oak). Salix (Willow, etc.) Populus (Poplars, etc.) Ficus (Figs, etc.) Viburnum (Honey Suckles, etc.)
Montana	Fox Hills	Cedar Creek, Custer Co. Cedar Creek, Dawson Co. Big Box Elder Creek, Custer Co. Castle Butte, near Forsyth, Rosebud Co., and many other places.	Baculites grandis. Belemnitella bulbosa. Scaphites nicolletii. Scaphites cheyennensis. Scaphites conradi.
	Fort Pierre.	Cedar Creek, Custer Co. Cedar Creek, Dawson Co. Cabin Creek, Custer Co., and many other places.	Hemiaster, Dentalium. Ostrea, Baculites ovatus. Baculites compressus. Inocerannus, Scaphites nodosus var plenus. Nucula. Yodia, Nautlius dakayi. Corbula, etc.
Colorado (Belly River)	Niobrara...	Colby Gulch near New Chicago Granite Co.	Glauconia coalvillensis.
	Benton.....		
Dakota.....		Frying Pan Basin, near Dillon, Beaverhead Co.	Goniobasis pealsi.
Kootenai		Sandcoulee, Cascade Co Near Augusta, Lewis and Clark Co. Near Lewistown, Fergus Co. Northeastern part of Flathead Co.	Sequoia smittiana Zamites montana Zamites apertus. Chiropteris spatulata Oleandra arctica

Periods.	LOCALITIES.	CHARACTERISTIC FOSSILS.
Jurassic	Near Harlowton, Meagher Co. Near Crockett, Carbon Co. Near Armington, Cascade Co. Near Augusta, Lewis and Clark Co. Near Choteau, Teton Co. North of Black Butte. Tobacco Root Mountains, Madison Co. Near Ennis, Madison Co.	Belemites densus Gryphaea calceola Camptonectes
Triassic (?) (Red Beds) Permian	Carbon County, near Crockett, Bowlder and Bridger. Big Snowy Mountains, Cascade Co. Near Armington, Cascade Co.	The writer has found no fossils in these beds, but the large gypsum deposits of the state are from this formation
Carboniferous	Near Armington, Cascade Co. Ruby Mountains, Madison Co. Bridger Mountains, Gallatin Co. Near Lewistown, Fergus Co. Snow Crest Range. Frying Pan Basin, near Augusta. Near Dillon, Beaverhead Co. Dupuyer Creek, Teton Co. Opposite Logan, Gallatin Co. Old Baldy, South of Virginia City, Madison Co. Sheep Mountain, south of Old Baldy. Spring Canyon, Ruby Mountains, Madison Co.	Straperallis sp. Spirifer grimensi Platycrinus bridgerensis Spirifer centronata Productus elegans Athyris crossicardinalis Zaphrentis
Devonian	Near Logan, Gallatin Co. North of Three Forks, Gallatin Co. West of Three Forks, Gallatin Co.	Spirifer disjuctus. Orthis sp., etc.
Silurian	Near Philipsburg, Granite Co.	Bachiopods.
Cambrian	Near Logan, North side of Gallatin River, Gallatin Co. Ruby Mountains, Madison Co.	Asphescus wheeleri Worm casts Corals.
Archaean	The Archaean is found in most of the Counties embracing the Rocky Mountains, and West.	

COAL BEARING FORMATIONS IN MONTANA.

The coal-bearing formations of Montana range from the Jurassic to the middle Tertiary. It has not only the greatest range among the Rocky Mountain states, but the greatest range of any state in the United States. The Jurassic coal in the State is of no commercial value, and as yet the Tertiary product has no great production, thus leaving the marketable coals and lignites to be supplied from the Cretaceous. Coal and lignite are found principally in the Kootenai, Laramie, and Fort Union* of the Cretaceous. Considerable undeveloped seams of lignite are found in the Neocene of the western part of the State. The Laramie however, is the chief coal bearing formation of the Rocky Mountains, and reaches its highest development in Montana, where it covers nearly two thirds of the State. The eastern half of the State is literally underlain by seams of Laramie lignite of varying thickness and often of exceptional purity. At the base of the mountains are found

* The Fort Union state is sometimes placed in the upper Cretaceous and sometimes at the base of the Eocene. Accordin to Chamberlin and Salisbury "all the formations referred to the Fort Union of the Eocene, are to be looked upon as representing the transition from the Mesozoic to Cenozoic."

the principal seams of Laramie and Kootenai bituminous coals of excellent quality, varying from the dry steam coals to good coking varieties. Part of these bituminous seams are older than the plains lignite and part younger. Those coal seams at Sandcoulee, Stockett, Belt, Lewistown, Toston, etc., have been determined by Prof. J. S. Newberry* as Kootenai, or lower Cretaceous. Those at Cokedale, Chestnut, Storrs, Aldridge, Bear Creek, Mountainside, etc., are Laramie and the other large producer at Red Lodge is Fort Union.

In the valleys of the western part of the State are found many fine beds of Neocene lignite. Near Drummond and New Chicago, near Missoula, near Darby and many other places, is this natural fuel found. Coal which may be considered as anthracite has thus far been recognized in but three places.

From these coal beds Montana will in the future derive her heating material for her great mining and smelting industries. No state in the Union is so favored with natural resources. Butte is the greatest mining camp in the world. At Anaconda is the greatest smelter that has ever been erected. At Great Falls are other large smelters. At Yogo, Fergus County, are the greatest sapphire mines on earth, and nearly every town in the State is benefitted more or less by the State's natural resources.

To furnish fuel for all the great industries, and for domestic use, of the State, is becoming a problem; but when the different coal and lignite fields have been thoroughly explored, when systematic coal mining is well introduced, the problem will be easily solved, and Montana will not be required to go to other states for her fuel.

GEOLOGICAL SECTION IN MONTANA.

The following show the various geological formations as now recognized in Montana, together with one or two new ones, proposed by the writer.*

Age	Formations	Thickness in Feet	Characteristic Rocks
Quarternary	Alluvian	0-50	River-sand and gravel.
	Glacial drift	0-100	Bowlders, unstratified or slightly stratified deposits of gravel, bowlders, sand, etc., unassorted.
Tertiary (Neocene)	Smith River beds	0-800	Clay, Volcanic Ash, Conglomerate, etc.
Cretaceous	Livingston	3300	Shale, conglomerate, dark-brown tufaceous sandstone.
	Laramie	900-1050	Sandstone, red shales.
	Fox Hills Fort Pierre		Gray shales, limestone concretions containing invertebrate fossils.
	Niobrara Benton	3000 to 4000	Black bituminous shales.
	Dakota		Quartzite, sandy shale, etc.
	Kootenai (Cascade) (Lower Cretaceano)		Sandstone. Coal deposits.

* The Flora of the Great Falls Coal Field—J. S. Newberry. American Journal of Science, March, 1891.

Age	Formations	Thickness in feet	Characteristic Rocks
Jurassic	Ellis	90-120	Arenaceous limestone and shale; conglomerate.
Triassic (?) "Red Beds" Permian	Bowler	400 to 500	Red shales and sandstones, thick beds of gypsum.
Mississippian	Quadrant	1400	Alternating beds of limestone and sandstone. Green shale. Limestone with sandstone beds. Green shale and limestones, often oolitic. Red clay.
	Madison	1025	Massive and white Limestone above, thin-bedded and dark grey below.
Devonian and Silurian	Monarch	165	Brown, granular limestone.
Cambrain (middle)	Gallatin (limestone) Flathead (quartzite)	1300	Limestone, massive and thin-bedded. Quartzite, (pink), and sandstone.
Proterozoic (Algonkian)	Spokane shale	210	Red shale
	Greyson shales	950	Gray shale and slate.
	Newland limestone	560	Bluish gray with inter-bedded slate.
	Chamberlain shale	2080	Slate and dark gray shale.
	Neihart quartzite	700	Massive bedded.
Archean			Gneiss, mica schist and intrusive rocks.

* The wavy lines signify unconformity of strata.

The above arrangement, formation names, thickness, etc., are taken in the main from Chamberlin and Salisbury's Textbook on Geology and from the works of Weed of the United States Geological Survey.

THE VARIOUS COAL AND LIGNITE FIELDS OF MONTANA.

While the state has never been thoroughly explointed geologically, enough work has been done to give, in general, an outline of the various coal and lignite areas within its borders. The different fields and areas are as follows: (1) Plains Region; (2) Bull Mountain Field; (3) Clarks Fork Field; (4) Rocky Fork Field; (5) Yellowstone Field; (6) Trail Creek Field; (7) Cinnabar Field; (8) West Gallatin Field; (9) Toston Area; (10) Ruby Field; (11) Belt or Great Falls Field; (12) Flathead Field; (13) Sweetgrass Hills Field; (14) Judith Basin Field; (15) Neocene Lake Beds Areas.

PLAINS REGION.

The lignite areas of Eastern Montana are a continuation of the large lignitic areas in the Dakotas. Almost the entire eastern half of the State is underlain by beds of good lignite. The lignite runs from the ordinary brown light, easily slacking, variety to the darker, heavier, almost semi-bituminous kinds. The beds vary from a few inches to more than 20 feet in thickness.

Some places are found where the lignite seams are very thinly capped, while others have several feet of clay, sandstone, etc., as a capping. Most of the seams are horizontal and were doubtless laid down in shallow fresh or brackish water.

While there are hundreds of lignite prospects in the plains region, only a few are worked for other than local domestic ranch use. The exact lignite area is not known, however it covers many square miles. The material forming the lignite grew during the later Cretaceous period and mostly in the Laramie formation. The most characteristic fossils of this period or at least the ones found in the clays above and sometimes below the lignite seams are: —Viviparus, Campeloma and Unios. These fossils are found in many places where lignite seams are not, but they are quite characteristic of the Laramie lignite formation.

Lignite in varying amounts, is found from Wibaux and Culbertson on the east, to Forsyth and Sanford on the west. From the southern part of Custer and Rosebud to the northern part of Valley County, hardly a township in Custer, Dawson and Valley Counties that has not more or less lignite. Vast deposits are awaiting development.

BULL MOUNTAIN FIELD.

This field lies wholly within Yellowstone County and is the most isolated coal area known in the State.

It is 45 miles northeast of Billings and on account of such a distance to market or a railroad, little development work has been done. The field is elliptical in shape and contains about 55 square miles of area. The fuel from this field is from two distinct formations, the Laramie and Fort Union.

CLARKS FORK FIELD.

The Clarks Fork field is one of the largest fields in the State. It passes through parts of Meagher, Sweet Grass, Yellowstone and Carbon Counties. It is the field with the newest activity—in the southern part, at Bear Creek. Its continuation south into Wyoming forms the Big Horn Basin field of that state. No mines of any importance are found in the northern part of this field but the central and southern portions have workable seams from 5 to 7 feet thick.

The coal of the southern part of the Clarks Fork field is lignitic-bituminous and the principal mines are found in Carbon County—especially at Gebo, Bridger, Bear Creek, Joliet and Elbow Creek.

The Butte and Anaconda smelters consume a large amount of the coal mined in this field. Over 300,000 tons were mined in 1905. There will be a large increase in 1906 owing to the opening and active operation of several new mines.

The mines at Bear Creek, Gebo, Bridger, etc., are found in the Laramie. According to Storrs the entire field "occupies the bottom of the Laramie formation."

ROCKY FORK FIELD.

This is one of the smallest but also one of the most productive fields in the State. It is located in the south central part of Carbon County, only a few miles from the Clarks Fork field. It is separated from Bear Creek by a high divide. There are several good seams found at Red Lodge ranging from 4 to 8 feet thick. Much active work has been going on here for sometime. The property at Red Lodge is owned and worked by the Northern Pacific Railway Company.

The character of coal in the Rocky Fork field is semi-bituminous. The coal strata dip to the west at an angle of 4 or 5 degrees.

"The field is about 6 miles in length north and south and extends eastward 5 miles from the limiting limestones of the western border."

While visiting this field the writer found several good leaf impressions in the intervening sandstones and after their careful study and partial identification they proved quite conclusively that the formation is Fort Union.

Storrs says, * "The coal-bearing rocks are immediately above the Laramie strata and probably belong to the Fort Union." Fisher says ** "About 4 miles southeast of Red Lodge, Mont., at the head of Bear Creek, several openings have been made. This area is locally known as the Bear Creek coal district. The coal is found in the upper sandy division of the Laramie and belongs to the same general horizon as the Red Lodge mines."

Without a doubt, the Bear Creek mines which belong to the Clarks Fork field, are found in the Laramie. As stated before, the writer found the typical Laramie fresh or brakish water fossils in some of the Bear Creek mines. To the writer's view the mines at Red Lodge are entirely separate from the Bear Creek formation. They all belong to the Rocky Fork field, and as before noted, are undoubtedly Fort Union.

YELLOWSTONE FIELD.

This field lies almost wholly within the counties of Gallatin and Park. Meagher, Broadwater and Sweet Grass Counties have a small portion each of this field within their boundaries. The field is almost an L shape and is divided into three districts. The Boulder district comprises the area of Laramie along the drainage of the West Boulder.

The area covered by the coal measures is 30 miles in length east and west, and from 5 to 18 miles in breadth.

"Only one coal bed has as yet been discovered in this district. This has a maximum thickness of 4 feet at the eastern end, on the West Boulder River." The coal of this district is good for steam and coking purposes.

"The Livingston-Bozeman district consists of the continuation of the Boulder district from the Yellowstone River westward."

"This district contains the maximum thickness of coal in the entire field and is the only portion in which actual mining is now going on."

"The Sixteen Mile Creek and Shields River districts extend northward

* Twenty-second Annual Report of the U. S. Geological Survey.
** Contributions to Economic Geol. 1903—U. S. Geol. Sur. Bulletin No. 225.

40 miles from the line of the Northern Pacific Railway, to the Northern end of the Crazy Mountains."

"From this point they extend westward 45 miles, around the northern end of the Bridger Range."

This field has received more attention than any other field in the State. It was examined by the geologists of the Hayden survey; Geo. H. Eldridge explored it for the Northern Transcontinental survey; in fact, nearly everyone who has written on the coal of Montana has taken this field as his text. The importance of this field lies not only in the amount and quality of its coal, but also in its proximity to the Northern Pacific Railroad.

The coal measures of the Yellowstone field are extensively worked at Cokedale Timberline, Chestnut, Mountainside. The character of the coal varies from a good coking variety at Cokedale and Storrs to a dry steam coal at Timberline and westward.

TRAIL CREEK FIELD.

Directly south of Bozeman about 10 miles is found this field. It is also "situated 9 miles south of the Northern Pacific main line at Mountainside, and separated by only half a mile from the Yellowstone field."

There are three coal beds of workable thickness through the northern end of this field, where there are two operating mines, in which the coal has a thickness of 4 to 12 feet.

The coal is a good semi-bituminous variety and many tons are taken out each year. A spur of the Northern Pacific Railway connects this field with the main line at Mountainside.

The geological horizon of the Trail Creek coal field is undoubtedly Laramie.

CINNABAR FIELD.

This is a small isolated field at the extreme southern end of Park County. The field lies directly north of the National Park and is divided by the Yellowstone River, and only the western portion is worked to any large degree at present. The eastern part has two mines one, known as the old "Bowers" mine and the other as the "Jones" property. The latter is worked in a small way, supplying fuel chiefly for domestic purposes in and around Horr (Electric).

The coal seams are found in highly metamorphic rock and are about 1,500 feet above the railroad. "There are four coal beds in the main portion of the field, all of which are of workable thickness, the thickest being 5½ feet."

The coal strata have been highly folded and faulted and subjected to the heat of nearby volcanoes, so that some of the coal has been changed to semi-anthracite. Part of the coal found in this field is coking, and at the town of Horr (Electric) situated between the east and west parts of this field, there is found a first class coking plant. There is but one large mine working at present in the western portion of this field, but all will be worked sooner or later, as the coal is probably the best in the State.

The geology of this part of the country is extremely interesting. Weed* gives a section of geological strata, from the Carboniferous to the Tertiary and places the coal seams in the Laramie. He gives the Laramie as follows:

	No. of Beds.	Thickness in feet.	
Laramie.....	29	800	Sandstones, containing coal.
Laramie.....	28	5	Coal seam.
Laramie.....	27	125	Sandstones, white massive, cross-bedded.

WEST GALLATIN FIELD.

Most of this field is located in the southwest corner of Gallatin County, a small portion, however, is found in the eastern part of Madison County. The field is not large and is a long distance from the railroad. The coal is found in small isolated areas and, as little or no systematic prospecting has ever been done, but little is known of the field. The seams range from 4 to 6 feet and some have shown good coking properties.

With a distance of 75 miles to a railroad and in not a very thickly settled section of the country, it will probably be some time before the real value of this field is known. It seems to offer a fairly good promise. The region is one of more or less volcanic metamorphism and the character of the coal will undoubtedly show good.

The geological formation of the field is Laramie.

TOSTON AREA.

The Toston area is small containing about six square miles. It is located three miles from the town of Toston on the Northern Pacific Railroad. The region is highly metamorphic and owing to this fact the coal is a high grade fuel. Part of the field yields coking coal while a portion contains graphite.

The size of the field and thickness of the seams will probably never warrant extensive workings, but the character of the fuel products is among the best in the State.

This field belongs to the Kootenai formation.

RUBY VALLEY FIELD.

About 30 miles west of the Gallatin field is found the Ruby Valley field. Not much prospecting has been done in this and no mines of commercial value yet opened. To the northeast of this and northeast of Virginia City, and also to the southwest are found other small areas of bituminous coal. To the east of this field there is a small area which yields semi-anthracite coal. This undoubtedly belongs to the Laramie formation.

BELT OR GREAT FALLS FIELD.

This field runs through Teton, Lewis and Clark, Cascade, and Fergus Counties. The last three counties have good workable mines within their borders. The field runs almost north and south through Teton County; northwest, southeast through Lewis and Clark County and almost east and west through Cascade and Fergus Counties.

* The Cinnabar and Bozeman Coal Fields of Montana, Geol. Society of America, Vol. 2.

This field is by far the largest in the State, outside of the eastern Plains portion.

The thickest part of the field seems to be in the central portion of Cascade County, in and around Sand Coulee, while it thins out both to the east and westward.

The character of coal in this field is both the coking and steam varieties. It is undoubtedly as good throughout as any coal in Montana.

There are many mines in this field and only in a few places has any systematic prospecting been done. Lewis and Clark and Teton Counties offer a splendid field for careful coal prospecting. The writer believes that the coal around Augusta and northern parts of Lewis and Clark County will develop good mines in the near future. The coal is a good quality and all indications point to plenty of it.

The principal mines in the Great Falls field are at Augusta, Lewis and Clark County; and at Belt, Sand Coulee, and Stockett, Cascade County. There are many smaller mines at other places especially in Cascade County, but none so far, have any marked commercial value.

The geological age of this field was determined by J. S. Newberry and the field itself was first described by Walter Harvey Weed in the third annual bulletin of the Geological Society of America, June, 1892.

It belongs to the Kootenai formation, Cascade of Weed, and is the only considerable ocurrence in the United States, of the Canadian coal fields.

FLATHEAD FIELD.

The Flathead field is entirely within the borders of Flathead County and has three distinct areas. First the North Fork of the Flathead River area; second the Middle Fork area and third the South Fork area. A good grade of lignite has been found in all of these areas, but only one, the North Fork area, has ever been worked to any extent, and it not within the past few years.

The character of the fuel as stated before is lignitic and in some places a fairly good thickness is found. The north and south areas are isolated from a railroad, while the middle area is partially crossed by the Great Northern trans-continental line.

The geology of this field is undoubtedly upper Cretaceous.

SWEET GRASS HILLS FIELD.

Most of this field is in the northwestern part of Chouteau County. But little work has ever been done in this direction. The coal is a semi-bituminous steam variety. There are several workable seams, but no commercial mines are in operation here at present. According to Storrs the coal occurs in the Belly River formation.

JUDITH BASIN FIELD.

This area is found entirely within Fergus County. It is somewhat triangular in form, running on the outer rim of the Judith Mountains. Its widest portion is directly west of Gilt Edge, around the southern part of Flat Mountain to a point almost directly east of Lewistown.

The character of coal found is semi-bituminous to bituminous, while so far none has shown coking qualities, it is an excellent steam and domestic fuel.

The geological formation is undoubtedly Kootenai and is probably a continuation of the Belt field.

SMITH RIVER AREA.

"This area lies along the high divide east of the Smith River." No thorough prospecting has ever been done in this area and but very little is known concerning it. The coal near the mouth of Smith River or Deep Creek is semi-bituminous but this latter undoubtedly belongs to the Great Falls or Belt field.

NEOCENE LAKE BEDS AREA.

The lignite found in the western third of the State is almost all from the Neocene Lake beds. The counties of Granite, Missoula and Ravalli being the chief ones. Most of the inter-montane valleys of Western Montana were formerly Neocene Lakes, and in these lake beds are found a fairly good quality of lignite. This fuel is mined in many places and the seams range from a few inches to several feet in thickness. It is as good as the Laramie lignites of the plains but has never been found in such large areas or as thick. However, these deposits are being sought after for local domestic fuel and will probably be in good demand within less than a decade. The beds in Ravalli County have so far shown the greatest promise.

In most of the coal areas that have been investigated the most apparent thing is the lack of attention that has as yet been paid to this great natural endowment of our State. In nearly every area there are only a few small places that have been thoroughly prospected, while outside of these small areas nothing accurate is known.

In the eastern part of Montana, in Rosebud, Custer, Valley and Dawson Counties, the plains are literally underlain with lignite of a good quality. Here where there is a scarcity of timber, the lignite has been mined in a desultory way for domestic use only, but with a small amount of capital invested this same lignite could be profitably mined on a large scale.

CLAY PRODUCTS

Production of Brick and Other Clay Products for the Year 1904.

COUNTY	Common Brick.	Value.	Front Building Brick.	Value.	Aluminum Fire Brick.	Value.	Silica Fire Brick.	Value.	Paving Brick.	Value.	Number of Feet of Sewer Pipe and Drain Tile.	Value.	Tons of Fire Clay.	Value.	Other Clay Manufactures.	Value.	Amount Invested in the Business.	Amount Paid to Labor.
Cascade	3,000,000	24,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18,000	9,000
Dawson	700,000	6,300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,000	2,450
Deer Lodge	.....	.....	.....	.....	479,384	24,591	758,216	51,225	.....	.....	.....	.....	.....	.....	.....	.....	50,000	47,659
Fergus	700,000	6,650	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,600	3,150
Flathead	1,400,000	10,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6,100	5,600
Gallatin	600,000	3,600	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,000	2,300
Lewis and Clark	1,800,000	12,500	35,000	700	22,000	440	.....	.....	140,000	2,100	.....	7,000	.....	.....	(a)	1,100	45,000	18,200
Missoula	2,250,000	18,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13,000	7,841
Park	1,250,000	11,875	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5,000	4,200
Rosebud	600,000	4,200	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,600	2,400
Silver Bow	3,750,000	22,500	30,000	450	200,000	6,000	.....	.....	.....	.....	10,000	2,500	600	2,000	.....	.....	80,000	20,000
Valley	225,000	3,100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,000	1,740
Yellowstone	1,500,000	13,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20,000	10,000
Totals	17,775,000	136,725	65,000	1,150	701,384	31,031	758,216	51,225	140,000	2,100	10,000	9,500	600	2,000	.....	1,100	250,300	134,540

(a) Flower pots, fire lining and special goods.

CLAY PRODUCTS

Production of Brick and Other Clay Products for the Year 1905.

COUNTY	Common Brick....	Value.....	Front Building Brick.....	Value.....	Aluminum Fire Brick.....	Value.....	Silica Fire Brick..	Value.....	Paving Brick...	Value.....	Number of Feet of Sewer Pipe and Drain Tile...	Value.....	Tons of Fire Clay	Value.....	Other Clay Manufactures..	Value.....	Amount Invested in the Business..	Amount Paid to Labor.....
Carbon	750,000	7,125	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,000	3,375
Cascade	1,500,000	12,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18,000	5,625
Chouteau	250,000	3,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	600	1,500
Dawson	750,000	6,750	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,000	2,625
Deer Lodge	.....	.....	.....	.....	105,023	4,083	1,349,270	82,252	.....	.....	.....	.....	400	960	.....	.....	.....	52,839
Fergus	400,000	5,600	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,800	2,400
Flathead	600,000	4,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7,200	3,672
Gallatin	1,000,000	7,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,000	2,800
Lewis and Clark	2,100,000	14,700	50,000	1,100	.....	.....	16,000	320	1,000,000	16,600	.....	.....	.....	.....	(a)	6,200	45,000	29,700
Missoula	1,200,000	9,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13,000	4,500
Ravalli	300,000	2,700	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,000	1,165
Sanders	350,000	3,150	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	500	.....	3,000	2,640
Silver Bow	5,000,000	30,000	25,000	350	200,000	6,000	.....	.....	.....	.....	12,000	3,000	500	1,800	.....	.....	80,000	30,000
Valley	500,000	6,125	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5,500	3,400
Yellowstone	2,800,000	25,200	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26,200	17,600
Total	17,500,000	137,350	75,000	1,450	305,023	10,083	1,365,270	82,572	1,000,000	16,600	12,000	3,000	900	2,760	500	6,200	209,300	163,841

(a) Flower pots, fire lining and special goods.

SAW MILLS.

The statistics of 168 saw mills were inquired into covering the years ended June 30, 1905 and 1906. For the former period 40 more or less accurate reports were obtained and 62 mills were estimated from indirect inquiry. For the latter year 51 reports were obtained and 45 estimated. The difference represents those mills that have either gone out of businss or suspended temporarily. The changes in operators are so numerous as to make it extremely difficult to follow them from year to year. In order to prevent misleading any one it may as well be said at the outset that statistics of this business are not to be relied on except in the matter of the output itself. The quantity of the output has been conscientiously sought and this may be taken as being as nearly accurate as it is possible to get. The product for the former year was 274,336,019 feet, board measure, being 20,517,019 feet increase over 1904 and the largest production that had occurred up to that time. For the year ending June 30, 1906, it amounted to 327,414,694 feet, an increase of 53,078,675 feet over 1905.

Of the amount produced in 1905, Flathead county still holds the lead at 43.73 per cent of the total; Missoula, 38.52 per cent and Ravalli, 13.44, per cent, the three counties turning out 95.69 per cent of the total production of the State. In 1906 the output in Flathead couny was 44.35 cent; Missoula, 31.06 per cent; Ravalli, 15.52 per cent, and Sanders, 4.75 per cent. For a proper comparison with former years the production from Sanders, the new county which was carved out of Missoula, should be added to that of Missoula in this year which would give the district, as it formerly stood, 35.84 per cent. These counties hold almost precisely the same relation to the total production of the State as in the former year. These conclusions are entirely satisfactory.

The next most trustworthy item is that of the selling price of the product. Much of this is sold to other operators on contract which has a tendency to reduce values considerably under the price at which the lumber goes to the wholesale merchants. Aside from the shingles, lath and manufactures, the total lumber output is valued at $2,692,024, of $9.81 for 1905, and for 1906, $3,524,770, or an average of $10.77 per thousand. These figures lead to fairly reasonable conclusions.

The amount paid to labor is always an unsatisfactory item to deal with in this business and the most diligent inquiry fails to remedy it much. The number of men employed is little better and the number of weeks operated is distinctly bad. It has been the effort to get the labor cost of both logging and sawing but it has never been practicable. The tables show the cost of labor per 1,000 to have been slightly less in 1906 than in 1905, but this is not

the truth. There has, in fact, been a slight increase in wages and each year it becomes a little more expensive to handle logs by reason of timber being farther and farther removed from easy access.

There has been an activity in the lumber business during the past two years such as was never known before. Prices to the trade have risen to the snapping point in places as was reflected in the disappointment suffered by some at the falling off in the fall business. Others, however, have been unable to supply their orders and have been obliged to call in their traveling salesmen.

New, large mills have been erected in Flathead county notably during 1906 and it is safe to say that not less than from $75,000 to $100,000 has been expended when the improvements on old plants are included.

The history of Montana's lumber industry is one of expansion and progression. The Middle Western States are coming to us to supply their needs. Montana is now in active competition with the woods of Washington, Minnesota, Wisconsin and to some extent Maine and the South. The completion of irrigation work in this State will increase the home demand. The scarcity of pine in Minnesota and Wisconsin has forced the retail lumber buyers westward and as we are geographically located much nearer for the purpose of communication, and some two or three weeks closer for shipment, than the coast, Montana is coming to be favored.

Two years ago our native woods were comparatively unknown outside of a limited territory. In the stress for building material, however, our western pine has proved good for all the purposes for which the eastern has heretofore been used. It is a trifle harder in grain and the heart wood is a slightly darker color. From the fact that all the wood of the shop type is shipped east to manufacturers and by them cut up and made into sash and doors, and by some sold as the native product of Wisconsin and Minnesota, argues the best utility of the wood that it is possible to produce. The sap wood is extremely white and takes up the greater portion of the tree and, while it works a little harder than Minnesota pine, it works to a smooth finish and has a silky and glossy appearance. It should not be confused with the sap wood of the eastern pine as it is more firm and durable and is in reality the better portion of the tree.

From a wood that no one wanted to a wood that is now in such demand that it is difficult to fill orders, is the brief history of Montana larch in the last few years. Only a few years ago timber locators were passing the so-called tamarack. Now it is larch and coveted. The growth in Montana is the most perfect, so far as known in North America. The tree is sound, tall, of medium size and comparatively soft in fibre with a large yield of clear strips and a fair amount of wide stock which makes it possible to market at reasonable figures, considering its quality.

LUMBER PRODUCTION.

Report of the Production of Saw Mills by Counties for the Year Ended June 30, 1905.

COUNTIES	Average number of employes when in operation	Number of weeks operated	Estimated Investment	Amount Paid to Labor—Logging and Sawing	Number of Feet of Lumber Sawed	Selling Value at Mill	Number of Shingles Produced	Selling Value at Mill	Number of Lath Produced	Selling Value at Mill	Value of Sash, Doors, Blinds, and Other Manufactures
Beaverhead	52	37	12,000	7,296	912,000	16,418	.....	.....	.....	.....	.....
Cascade	2	5	1,500	270	60,000	720	15,000	38	.....	.....	.....
Chouteau	13	38	3,400	2,060	690,000	9,810	.....	.....	.....	.....	.....
Custer	13	70	6,500	7,600	925,000	13,850	.....	.....	.....	.....	.....
Fergus	39	39	18,000	16,237	2,000,000	24,000	.....	.....	.....	.....	.....
Flathead	811	583	1,653,000	373,809	119,970,314	968,117	.....	.....	7,330,350	12,245	.....
Gallatin	21	49	81,775	28,827	4,250,000	42,675	.....	.....	.....	.....	.....
Granite	62	30	8,672	6,499	1,200,000	9,600	.....	.....	.....	.....	.....
Madison	11	73	6,000	4,200	580,000	7,860	.....	.....	.....	.....	.....
Missoula	907	291	7,093,771	845,971	105,686,897	1,173,807	5,800,000	9,206	6,777,000	17,494	182,188
Ravalli	365	126	489,000	172,949	36,861,808	406,867	.....	.....	3,991,950	11,377	41,730
Sweet Grass	14	20	7,000	7,800	900,000	13,500	.....	.....	.....	.....	.....
Yellowstone	5	18	1,500	900	300,000	4,800	.....	.....	.....	.....	.....
Total	2,315	1,379	$9,382,118	$1,474,418	274,336,019	$2,692,024	5,815,000	$9,244	18,099,300	$41,116	$223,918

THE WAY WE RAISE PEAS FOR LIVE STOCK.

LUMBER PRODUCTION.

Report of the Production of Saw Mills by Counties for the Year Ended June 30, 1906.

COUNTIES	Average number of employees when in operation	Number of weeks operated	Estimated investment	Amount paid to labor, for logging and sawing	Number of feet of lumber sawed	Selling value at mill	Number of shingles produced	Selling value at mill	Number of lath produced	Selling value at mill	Value of sash, doors, blinds and other manufactures
Beaverhead	41	39	12,000	8,096	1,012,000	18,216	.....	.....	.....	.....	.....
Carbon	17	49	3,500	9,000	1,000,000	14,362	.....	.....	.....	.....	.....
Cascade	2	5	1,500	360	60,000	720	.....	.....	.....	.....	.....
Chouteau	4	14	400	520	130,000	2,600	.....	.....	.....	.....	.....
Custer	8	22	4,000	2,800	375,000	4,325	.....	.....	.....	.....	.....
Fergus	40	10	18,000	21,825	2,500,000	35,000	.....	.....	.....	.....	.....
Flathead	884	492	1,584,500	367,538	145,206,271	1,271,026	.....	.....	8,446,400	15,742	.....
Gallatin	19	46	81,000	28,220	4,570,000	45,850	.....	.....	.....	.....	.....
Granite	17	17	8,000	4,900	1,000,000	8,000	.....	.....	.....	.....	.....
Madison	14	35	6,900	6,923	690,000	12,150	.....	.....	.....	.....	.....
Missoula	970	200	6,862,901	855,990	101,791,219	1,298,633	.....	.....	7,955,000	23,865	173,528
Park	20	22	10,000	12,500	1,500,000	24,000	.....	.....	.....	.....	.....
Ravalli	344	214	485,500	316,182	50,830,204	611,963	.....	.....	7,212,000	19,329	91,086
Sanders	117	122	49,500	76,201	15,550,000	159,925	3,500,000	5,775	.....	.....	.....
Sweet Grass	14	25	7,000	8,400	1,200,000	18,000	.....	.....	.....	.....	.....
Total	2,511	1,312	3,500,000	$1,719,455	327,414,694	$3,524,770	3,500,000	$5,775	23,613,500	$58,936	$264,614

From the fact that Montana manufacturers have been producing larch for some twelve to fifteen years, it puts them in the lead of the manufacturers of this wood through their study and close experience with it, and it is the opinion of both manufacturers and users that the time will come, and not very far distant, when larch "selects" will be considered in a class along with oak and birch. The way in which "selects" are graded, in which the best grades are practically absolutely clear, and the second grades nearly so, makes it compare grade for grade with the best that are being offered in other woods which are very rare and high in price.

Comparing the utility of larch with other woods it is found that for inside finish it is especially well adapted as it takes paint, stain and oil with good effect, the wood having a very pretty grain and a color distinctly its own. When put to the severest test that inside finish can have—that is, exposure to steam heat—it does not, when thoroughly seasoned, warp, coil or twist, which cannot be said of any other of our western products. It also has great resistance to decay and for use where exposed to moisture, such as for sills or tank stock, it can be used to good advantage.

In larch there is very little sap. A tree measuring 18 to 20 inches in diameter would have a ring of sap measuring only about one-quarter of an inch across. It wears well when used for porch and house floors, especially where the grain is selected with a view to getting it vertical. The fibre being quite close it does not wear "ribbed," as is the case with fir, nor is it subject to splitting in so marked a degree; nor is it subject to pitch-pockets to such an extent. So, for the multiplicity of purposes for which lumber is used it answers all requirements as readily as the older woods which are better known and it has been largely a matter of prejudice against this wood as well as sympathetic interest in an imaginary merit in the older woods that has delayed its welcome by consumers.

Quite a little of both Montana larch and pine is going into the Atlantic coast states where they are competing practically with all the known woods of the American continent, particularly southern pine, red wood, fir, red cedar and cypress, and they are meeting ready sale. The larch demand so far is almost wholly for moulding and inside finish.

Eastern houses are also looking to Montana for box stock in the last couple of years, and the larch is especially adapted to this use owing to its pretty color and lack of odor. Being cherry in color it is adapted to the use of shippers of meats and canned goods for the reason that it does not stain and show soil quickly from handling, and from the fact that it is free from odor it is especially adapted for use in shipping butter, fresh meat and similar products that are injured when shipped in spruce, white pine or similar odorous woods.

Box making has brought about some notable changes in the lumber industry in that it enables the mills to utilize a good deal of material which was formerly waste, or at least would only bring a low price.

BREWERIES.

Few of the home industries show a more satisfactory growth or appear to have attained a more permanent business basis than that which marks the brewing industry in Montana. While it is true that thousands of barrels of malt liquors are still shipped into the State each year, both in bottles and in bulk, the records of local production are conclusive evidence of increasing popularity and growing demand for an article which is the result of a combination of home enterprise, home materials, and home labor. In the first annual report of this bureau for the year ending June 30, 1893, the number of breweries in the State was 14, the capital invested was $672,500, and 42,671 barrels of beer were made, with a valuation of $336,875. Hours of labor ranged from 56 to 72 a week. In the year ending June 30, 1905, the total production was 195,741 barrels, an increase of 360 per cent over 1893, and for 1906 the production was 219,562 barrels, an increase of 12.17 per cent over 1905. The capital invested has reached $1,200,000, and $169,000 was expended for construction and improvements during the past two years. The value of the product in 1905 was $1,663,798 and in 1906 was $1,848,656.

In the former year 11,744,460 pounds of malt, and 13,093,352 pounds of barley were used, and in the latter year 13,049,340 pounds of malt, and 15,659,208 pounds of barley. But 3,000,000 pounds of malt were shipped in from other states, the balance being the product of Montana farms.

The amount of money paid to labor in 1905 was $420,843.15, and for 1906 was $467,601.35, the latter sum exceeding the value of the total output of 1893 by more than $130,000. The hours of labor are now uniformly eight a day, and an agreement between the proprietors in a state association, and the employes represented through the Butte Brewers' Union which has jurisdiction over all brewers in the State, is signed for a term of years. The State Brewers' Association embraces every proprietor in the State, and every employe is a member of the Brewers' Union.

Many of the breweries operate bottling establishments in connection with the main plant, and these as well as the breweries themselves are models of cleanliness and modern development.

There seems little reason to doubt that the product of such a combination as is afforded by the matchless Montana barley and the pure water of its mountain streams, will in time practically prohibit the importation of eastern beers in the State and result in a still greater expansion of this industry. Even with the present production, few of the plants are operating to their fullest capacity, and there are plans under way for the erection of new breweries in different localities. Altogether it may be said that as a whole, no manufacturing enterprises in the State show the prosperity, development, and control of the local trade that is exhibited by the breweries.

NEW INDUSTRIES.

MONTANA CHEMICAL COMPANY.

The Montana Chemical Company, with office and laboratories at the corner of Eighth and Rodney streets, Helena, was incorporated in June, 1906, with a capital of $40,000. The business of this concern is that of analytical chemists and manufacturing pharmacists. This is a field hitherto untouched in the inter-mountain country. There is no other business of this character between St. Paul and the coast. The officers are: George R. Fisher, president, and R. J. Lemert, secretary and treasurer.

This business may be said to have originated with Mr. Lemert who has followed the pursuit of chemistry in one department or another the most of his life and who, in the year 1904 began in a small way to manufacture a limited line of household extracts, spices, etc. Time combined with a large stock of persistence together with the determination to use nothing in the manufacture of the products but that which is absolutely pure, has won its way so well that an obscure room was vacated a few months ago for a commodious building and an incorporated company organized. Mr. Fisher, who joined the business at the time of the incorporation, is also a practical chemist and pharmacist whose experience with the particular products that are dealt with is of inestimable value to such an enterprise.

A visit by the Bureau's representative was made in early December. It is only fair to say that what met his observation was a complete surprise. The scale of operations had not been suspected. The evident care with which all the products were being turned out was corroborative of the claim of purity. The queer-looking original packages of spices, herbs, extracts, etc., from foreign countries made apparent the quality of the raw materials. There were sacks of black pepper with all their queer markings from Madras in Farther India Others contained the best white pepper in the world from Singapore. Cayenne pepper which had been shipped from Japan and Sierra Leone on the west coast of Africa, mace from Penang in the Malay Peninsula, nutmegs from the same place, and cloves from Zanzibar were in stock. Original sacks that were in themselves curios to the Yankee eye, contained rolls of cinnamon bark as much as two feet long which had come from Saigon in French China. Ginger, the only Jamaica, was being ground from the root, and there was no mistaking its quality. The very best grade of English yel-

low mustard is the only one carried. There were leaf herbs such as sage, savory, marjoram and thyme of both American and English growth—absolutely pure and of the best, for every raw material must pass muster in the laboratory before it is allowed to go to the work room.

In the department of flavoring extracts was found a shipment of the long Mexican vanilla bean, the finest in the world for manufacturing vanilla extract and which costs $8.50 a pound at wholesale in large quantities, and in this laboratory almost a pound of the beans is used to a gallon of the product. Here an opportunity was afforded to make a comparison between the Montana product and the eastern, a large part of which latter is made from the bean which comes from Tahite, on one of the old Cannibal Islands in the Southern Pacific ocean and which only costs 60 cents a pound. By far the most of the vanilla extract that is sold comes from the latter poorer bean. There were the original copper containers of Italian oils, with seals unbroken, which had been imported from Messina from which the lemon and orange extracts are made, each pound of oil representing the contents of 3,000 lemons or oranges. In the "Land of the Sun" these oils are extracted by hand as against the domestic product which is machine-pressed and, therefore, carries all the bitter extractions with it; hence the desirability of the foreign article.

These are but a few of the things that are being made here which are destined to delight the hearts of the housewife and chef, and a still larger line is to be taken on as fast as new and larger machinery can be installed.

A full line of family remedies is being put out, the purity of which may be determined by any one who will take the trouble to call and witness the operations at the laboratory. These consist of such remedies as cough syrup, liniments, ointments, toilet articles, including perfumes, and a long list that it is impracticable to menton here.

The manufacture of the products of the Capitol Stock Food Company has been taken in charge by this company, as has also the Capital Cresol Compound Sheep Dip, which, in addition to having been demonstrated as one of the very best on the market for dipping cattle and sheep, is also put up in packages suitable for household use as a disinfectant.

The preparations from the pharmaceutical department are so many and varied as to make it impracticable to mention in this report, but they are being sold and "repeat" orders are coming in by mail every day.

The equipment is made up at present of a chemical laboratory for pharmaceutical testing and analytical work, where every article bought is tested whether it comes in an original package or not, and in this department commercial analyses are also made. A modern assay office for making all kinds of fire tests has been installed. Tablet and tablet-coating machines; spice and drug mills, which are run by electric power; in fact, a well developed plant is established and a printing department is to be added immediately.

A guarantee such as is required by the new National Pure Food law has been filed with the United States Department of Agriculture, and be it said to the immense credit of this Montana company, not a single change in any

ingredient that goes into the manufacture of any article made has been necessitated by this new law.

All the products of this factory are distributed under the "Red Seal" label which, in itself, is a guarantee to the purchaser in any store of the purity of the commodity. All the raw materials in use that come from foreign lands are imported direct through the company's New York broker without either the assistance or interference of middle men. The care with which the raw materials are selected may be inferred from a letter which was shown the Bureau's representative to the effect that recently in his attempt to fill an order for black pepper the broker wrote that "a shipment has just arrived at New York but is not of the high quality you demand. I am awaiting the arrival of another cargo."

The very rarity of such an establishment as this cannot but stimulate Montana's pride. Organized barely six months ago, it has three traveling men on the road—except that one is temporarily laid off on account of more orders being received than could be filled for the time. The opportunity is great for conscientious work along these lines, and it is the conscientious work that is being done here that guarantees the growth of this concern to proportions which it would be difficult to forecast. It may be said, however, that unless appearances are altogether deceptive, the Bureau will have the privilege of recording a rare success in relation to this enterprise two years hence.

A "JACK" ROUNDUP.

THE HELENA POWER TRANSMISSION CO.

At a cost of about $2,000,000 the Missouri River Power Company in 1898 completed a power plant and a 30-foot dam with a generating capacity of 8,000 horsepower at Canyon Ferry in Lewis and Clark County. The dam was built of a rock and earth-fill crib construction. In 1902 a system of flashboards and strengthening of the old dam was completed whereby the water was raised ten feet higher, giving a capacity of 10,000-horsepower to the plant. At the same time a canal and forebay were constructed whereby the water was carried direct to the water-wheels instead of through long penstocks. The power house is a granite building, the rock having been taken from alongside the site. The water-wheel equipment is the S. Morgan Smith type. There are ten 1,000-horsepower water-wheels direct-connected to ten 750-kilowatt generators. Also three small wheels direct-connected to exciters. The electrical equipment was made by the Westinghouse Electrical and Machinery Company of Pittsburg, and consists of ten 1,000-kilowatt generators; two 90 kilowatt exciters direct-connected to water-wheels; one 225-kilowatt exciter direct-connected to water-wheels, and one 115-kilowatt exciter driven by a motor. The voltage coming from the generators is 2,200 and after passing through the transformers is sent out on the line at 60,000 volts with perfect success.

The power is sent to Butte and Helena supplying the lights and street railway at the latter place, the smelter at East Helena and the mines at Butte. The long-distance line to Butte is built on two pole lines spaced 40 feet apart and on each of these are three copper cables of seven strands each. These are spaced in a triangle on the poles giving them a distance of six feet apart. The length of the line from Canyon Ferry to Butte is 75 miles.

In 1905, the Helena Power Transmission Company was organized to build another dam and in the summer of that year a location was selected 18 miles below the Canyon Ferry site. This company decided to erect a steel dam which is a new thing in dam construction. The location made necessary a structure 85 feet high and 630 feet long. The steel columns all rest on concrete piers and are spaced a distance of ten feet apart. The apron, or spillway, is built on a rock filled crib extending across the river and 80 feet in width, this crib being built up to meet the steel coming over the crest of the dam. The water will be led to the penstocks through a canal 80 feet wide at the entrance, 35 feet deep and which will run back 230 feet. From this canal five 12-foot penstocks conduct the water to the large turbines and three 4-foot penstocks take water to the small exciter turbines. The five

turbines, made by S. Morgan Smith Company of York, Pa., have a capacity of 4,000-horsepower on a 65-foot head. They are direct-connected to five 4,000-horsepower Westinghouse electric generators which deliver the current to the nine 3,000 horsepower transformers at a voltage of 2,400. After passing through the transformers the current will be stepped up to 70,000 volts at which voltage it will be sent out on the transmission lines. These turbines are fitted with the latest type of Lombard governors which are regulated at will by the operator at the switchboard.

There are also two 300-horsepower turbines direct-connected to exciter generators, one of which furnishes enough current to excite all of the large generators.

All the electric switches, even to those of 70,000 voltage, are controlled by pilot switches at the main switchboard.

The power to be generated will be utilized in connection with the power now furnished at the Canyon Ferry plant and will be sent to Butte and Anaconda, the latter place distant 110 miles, at a voltage of 70,000 which is the highest used in the world at the present time, and the line is the longest high-voltage line in the world.

The backing up of the water in the reservoir makes a lake 18 miles long, and another arm where Prickly Pear Creek comes into the Missouri River will be seven miles long from which it will be possible to pump sufficient water to irrigate 30,000 acres of land.

It is expected that the plant will be ready for use by January 1, 1907. Its cost will approximate $1,500,000.

Plans are completed for an elaborate summer resort on the lake 12 miles from Helena. This will be known as Lakeside, and will be one of the finest in the West.

The company has also just completed a 6,000-horsepower substation at Butte, which generates electric power by means of steam turbines. This is an auxiliary plant intended for service in case of accidents or necessary shut downs from any cause at the river plants. The cost of this station will reach in the neighborhood of half a million dollars.

A DISTILLERY.

An industry entirely new to the State is located at Manchester and known as the Montana Distilling Company. The capital invested is $25,000, and construction of buildings was begun in 1906. The officers are: C. F. Grove, Great Falls, president; James Kosca, Seattle, vice president; J. T. Rundell, Manchester, secretary-treasurer and manager. The latter-named gentleman was the promoter of the enterprise and the work of building and installing the machinery has all been under his supervision.

The present capacity of the plant is 60 bushels of rye every day of 10 hours from which is produced 240 gallons 100-proof high wines, which capacity can be quadrupled without addition to the present building.

Tests of the waters of Sun River have demonstrated it to be specially adapted to the manufacture of good rye whisky. In more than 30 experiments made by Mr. Rundell on Cascade County rye during the past three years, he finds that an average of four gallons of 100-proof high wines can be made from a bushel of this grain, an exceptionally good average. The best results in these tests were had from grain grown without water, the poorest sample of rye coming from an irrigated farm and yielding but 13 quarts of spirits to the bushel.

The main building is three stories high, 50x100 feet, with a boiler-room 18x40 feet. The latter contains a 60-horsepower boiler and 22-horsepower engine.

In the process of manufacture the rye is ground in a three set roller mill and elevated to a meal bin on the upper floor at which place it is in charge of a government gauger who carries the key to the bin. The meal is then drawn off into a scale hopper and weighed whence it goes into the mash tub where 45 gallons of water is added for each bushel of grain used and the whole is heated to a temperature of 140 degrees, then cooled and yeast added. From the mash tub it goes to two fermenting tanks, each six and one-half feet high and eight feet in diameter where it is allowed to ferment 72 hours and dropped into the beer-sink vat; then pumped to the beer still where the alcohol is distilled off, the vapor passing into the low-wine tank and from there to the doubling still where the product can be raised to the desired proof. The finished product is drawn off into two tanks in the receiving room where it is barreled and stamped and finally stored in the United States bonded warehouse

From all this it is apparent that Montana has added another achievement to her wonderful record in that home-grown rye has been shown to excel in quality that of any other state for the production of distilled liquors exactly as Montana malting barley for brewing excels all others.

The proximity of the grain fields will prove of great advantage to this new enterprise as the long haul of raw material necessary in enterprises of this character in other states will be entirely eliminated.

THE SECOND MONTANA WOOLEN MILL.

Eight miles from Great Falls is the townsite of Manchester, the location of the Manchester Woolen Mills, the second industry of its kind to be established in the State. The officers of the company are: Sam H. Wood, president; A. G. Voight, vice president; A. E. Caufield, treasurer; E. D. Wood, secretary. These, with B. E. Lehfeldt, constitute the board of directors. The organization was perfected in March, 1906. Buildings were erected in 1904, and manufacturing operations were begun on August 15, 1906. The actual cash investment at present is $25,000. The mill building which is of stone, two and one-half stories high and 80x100 feet dimensions, is located on the banks of Sun River whose waters are especially adapted for the scouring of wool. The present capacity of the plant is 28 pairs of blankets and 50 yards of cloth a day but this will be increased at an early time.

Already the local demand for the product is active though no special effort has been made to extend sales which, except to supply transient inquiries for samples, have so far been confined to Great Falls.

The equipment of the plant is comprised of one set of 48-inch cards—three machines; one set of 36-inch custom cards; four 100-inch cloth looms; one 360-spindle mule spinner, two pickers, scouring plant, wash mill, fulling mill, spooling machine, 36-inch shears, 90 inch napper, two dye vats, a 40-horsepower engine and two 25-horsepower boilers

KNITTING MILLS.

The Montana Knitting Mills Company, officered by J. H. Moorehead, as president and manager and E. B. Moorehead, secretary, was started at No. 6 South Main St., Helena, in the spring of 1905. A branch office is also maintained at Butte. This concern has an investment of about $10,000 and more than as much again will be put into the business within another year. Up to the present time three men have been engaged in taking orders from individuals for the various products of this factory which are knit goods in silk, linen, wool and mercerized; union suits, underwear, sweaters, socks, stockings and ladies' knit goods are a specialty. The product is of rare quality and durability. The goods have obtained a reputation which place eastern products out of the range of comparison at similar cost.

The equipment of the plant is at present 11 knitting machines, and 10 finishing machines propelled by electric power. There are 20 employes who work nine hours a day under the rules of the Textile Workers' Union, and it is the testimony of the management that his employes are of a most sat-

isfactory kind notwithstanding the new character of the work to nearly all of them.

The success of this enterprise again illustrates the truth of the repeated contention of this Bureau, often in opposition to popular opinion, that the Montana scales of wages and short hours are not a bar to successful manufacturing in this State. It is useless to look for a large amount of labor in small towns, but any prosperous city of 3,000 to 5,000 inhabitants can be depended upon to furnish the necessary labor for as large an enterprise as is apt to seek such a location, provided always, that the management is willing to adapt itself to Montana's standard of fair treatment of employes in the matter of wages and hours.

FOOD MANUFACTURERS.

The first successful food manufacturer in Montana is Mr. G. W. Shaw, who, in 1893, started the manufacture of pan-cake flour at 424 Harrison Avenue, Helena, where the business is still conducted. The reward that is sure to come from persistent effort coupled with unswerving fidelity to purity and cleanliness of the product, has come to this enterprise; so much so that within the last year a new product from this factory has been placed on the market in the form of Wheat Creamlets. Without the means to advertise, the rare merit of these products have forced the market until now they are popularly in demand and the output has doubled within a couple of years. In the prepared flour none but the best selected Montana wheat is used together with the best corn and rice obtainable.

These products have invariably been awarded first prize at the state and county fairs. If we could only realize that the cost of profuse advertising of breakfast food by eastern concerns must be paid by the consumer, and that we have a home enterprise employing local capital, labor and raw materials of the best that can be grown in Montana, there would speedily be an astonishing increase in the volume of business of this factory. A further sequence of such a realization would be that our farmers and laborers would be made richer, and all the money paid out for breakfast foods would be kept in our own State to the infinite advantage of its people.

PACKING PLANTS.

P. B. MERRILL & COMPANY.

As in the erection of a mammoth sugar refinery, an account of which will be found on page 142, Billings was the first to act in the State, so in the matter of a packing house which began operations in September, 1904, under the proprietorship of P. B. Merrill & Company.

Mr. Merrill has had a life-long experience in the handling of livestock, and for a number of years was foreman of one of the largest cattle ranches in Eastern Montana. Like every other thoughtful man, he was puzzled at the wasteful practice of shipping live animals to the eastern market to be butchered, while the meat, meat products, and by-products were returned in large quantities to Montana for consumption. The waste of energy, time and money involved in this custom impressed him for a long time, until the opportunity came in a small way to make experiments for fattening and butchering for the local market direct. He took the lost motion out of the business, and showed a profit from even these single-handed operations in spite of all difficulties and discouragements. A packing plant for Montana became his ambition, for, after much study, observation, and inquiry, he had proven to his own satisfaction that he could compete in this territory with any of the eastern concerns. After two years of strife and struggle, he succeeded in interesting sufficient capital to make a start in a small way, and his judgment has been justified by the results of the business from that time to the present. The construction of a suitable building was begun in May, 1904. Butchering began in September following, and in December of the same year the present company was organized. The original investment was $30,000, and this has since been increased to $50,000.

The plant which occupies two city blocks about a mile west of the center of the city, is now undergoing enlargements and improvements which will cost $20,000, and double its capacity. The record of business done speaks for itself. During the first six months it amounted to $30,000; the next six months it was $100,000; for the year 1905 it was $200,000. The first half of 1906 the volume of business increased to $150,000, and the balance of the year will certainly show $200,000 of business, which has now grown to interstate proportions. Ten thousand dollars worth of products was sent into Wyoming during the first half of 1905. The output of this plant readily commands from one half to three quarters of a cent a pound more than the Chicago, Omaha, and Kansas City product, and the number of customers who demand the home dressed meat from retail dealers is rapidly increasing. The maximum capacity of the plant is 3,000 animals a month, equally divided between cattle, sheep and hogs. At present 300 cattle, 500 sheep, and 500 hogs are butchered a month, two-thirds of the latter being shipped alive from Nebraska because they are not to be had in Montana. Mr. Merrill has this to say of the Montana hog:

"As compared with the Nebraska hog which is properly grown and finished in that state, the Montana hog of like quality and like care is notice-

ably the better meat, and more profitable to the butcher and grower alike. He has 12 per cent better meat to the liveweight. The average of Montana hogs will easily run from two to three per cent better than those from Nebraska. I have butchered Montana hogs that dressed out 86½ per cent of live weight that were fed only 12 hours before slaughter."

Here is not only food for the body, but food for thought as well.

THE MONTANA PACKING COMPANY.

The second packing house to be started in Montana is located two miles south of the business center of Butte, and is the property of a company composed of well known residents of the State. The capital stock is $50,000, and the officers are John B. Wellcome, president; Otto Stroh, vice president; Ralph Hodgens, secretary; E. C. Howard, manager. Business was begun in July, 1905, the new firm taking over the plant of the Everybody's Meat Company. The condition of business is such that the capacity of the establishment is soon to be doubled. At present the company is killing 500 beeves, 500 calves, 500 lambs, 1,200 mutton, and 600 hogs a month, all Montana grown animals, and retail shops in Butte handle the entire output. Besides fresh meat the plant is furnishing lard, hams, bacon, and all kinds of meats and sausages. The company's business is housed in a new, modern building, with every necessary up-to-date appliance to facilitate the work. Cleanliness and care is everywhere apparent, conditions being wonderfully different from those recently described in the public press as existing in eastern packing houses.

A feature of the equipment is the ice plant, a direct-expansion ammonia machine, having capacity for 20 tons of ice every 24 hours. From the slaughtering floor the carcass is sent first to the chill room, which has hanging room for 250 beeves; then to the cutting room, and finally to the two cooling rooms.

The beef cooling room has ten overhead tracks upon which the meat is hung and will accommodate 500 beeves; the veal room has six tracks and holds 250 calves, these being sold with the hides on.

In speaking of the quality of beef handled, Manager Howard, who was an Armour employe for many years, expressed the opinion that Montana grass fed steers made the best beef of any grass-fed animal in the world, though he was not prepared to say that it was superior to the corn-fed. There was no doubt at all that cattle from the Big Hole not only made a very superior quality of table meat, but that the percentage of loss in dressing was less than in any other class of animals the packing company had ever handled.

Probably the greatest advantage on the side of this home industry lies in the fact that carload rates on beef shipments from Butte to Chicago are $1.35 a hundred weight, and on the dressed product coming west $1.50 a hundred, making a total of $2.85 less cost for the local concern.

This together with the certainty of always having fresh meat from home-grown animals, dressed under absolutely clean and sanitary conditions, as well as the fact that at present no carcasses of dressed beef are shipped into Butte from eastern houses, would seem to insure an extensive and growing businss for the Butte plant.

RAILROAD CONSTRUCTION.

THE CHICAGO, MILWAUKEE & ST. PAUL.

The years 1905 and 1906, especially the latter, have witnessed remarkable activity in railroad building, including no less a project than a new transcontinental road which is to traverse the State. Besides the construction of a connecting link between existing main line systems, there are at present under way, extensive double tracking operations on the Northern Pacific, as well as an important cutoff in Western Montana. These undertakings involve an enormous expenditure of money, furnish employment to thousands of men and teams, and afford an excellent market for farm produce of all kinds.

The Chicago, Milwaukee & St. Paul extension to the coast and the Billings and northern connection between the Northern Pacific and Burlington at Billings, and the Great Northern at Great Falls, will afford transportation facilities to and materially aid in developing a large area of new country that has heretofore been devoted almost entirely to stock ranges. Both these enterprises will add largely to the taxable wealth of the State, increasing main line mileage by approximately 860 miles, not including 95 miles of the Montana Railroad from Harlowton to Lombard.

Legally, this corporation will be known as the Chicago, Milwaukee & St. Paul Railway of Montana, and its tracks will cross the State from east to west with a length of about 750 miles. This includes a portion of an existing road, which, however, will be entirely rebuilt.

Construction work was begun near Terry, Custer County, in May, 1906, and is now progressing in four general divisions from the eastern boundary of the State to Butte as fast as 4,000 men, 2,000 teams, steam shovels, drills, and all modern road building appliances will push it. Trains are expected to reach Butte inside the year 1907.

The road enters the State on the east line of Custer County about 40 miles south of the Dawson County line following Sandstone and O'Fallon Creeks to Terry; thence down the Yellowstone river to Forsyth, crossing the river three times in this distance. Miles City will be an important division point on the new line, and already shows great activity because of this fact.

From Forsyth the road follows Great Porcupine and Horse Creeks to the Musselshell River at a point 15 miles east of Musselshell postoffice, following the river on a route which touches the towns of Roundup, Lavina and Shawmut, to Harlowton. From the latter, the old Montana railroad will be utilized after being entirely rebuilt to Lombard. At Lombard the road crosses the Missouri River, running south to Three Forks, whence it follows the Jefferson River to Whitehall paralleling the Northern Pacific all the way; then south of Pipestone Springs, over the Pipestone Pass to Butte, where yards will be established on the flat to the south of town. The location of the station in Butte has not been determined.

From Butte the Northern Pacific will again be paralleled to Missoula, and the Couer d'Alene branch as far as Saltese, at which place the range is crossed by a tunnel 8,500 feet long. Thence down St. Joe Creek and out of the State. At Missoula the passenger line will follow the flat on the south side of the river, passing under the bridges, while the freight traffic will be diverted southward at the mouth of Hell Gate canyon, rejoining the other track west of the city.

THE BILLINGS AND NORTHERN.

This road is practically an extension of the Burlington from Billings its pesent track terminus to Great Falls, and will serve as a second north and south connecting link between the Northern Pacific and Great Northern roads. The distance is 200 miles and the route touches Lavina, Yale, Garneil, Stanford and Geyser, passing 25 miles west of Lewistown.

Work is being prosecuted the entire length of the line, and about one-third of the distance has been graded. Two thousand men are employed, and the road will be completed during 1907, at a total cost of $7,000,000. This road will open to development a rich agricultural, coal and mineral district in Cascade, Meagher, Fergus, and Yellowstone counties, which has heretofore lain dormant for lack of transportation facilities.

THE NORTHERN PACIFIC.

Two important sections of this road are being double-tracked and improved by lessening grades and reducing curves. Between Livingston and Muir a change of line and grade is being constucted which will reduce the present grade of 2.2 to 1.8 per cent, and eliminate much curvature and distance. The work is being completed for double-track and consists of 1½ miles of second track parallel with the present main track, and 10½ miles of new line. The contract was let to Cook, Deeks, Hinds & Company on June 26, 1906, and calls for completion in the summer of 1907.

From Garrison to Missoula double track, including several line changes, is being constructed. The length of line change is 30 miles, and the length of second track parallel with the present line is 34 miles, making a total of 74 miles of new track. Contract for this work was let October 16, 1906, to Winston Bros. Company.

On the same date, and to the same company, a contract was let for the construction of a connecting link extending from the Couer d'Alene branch at St. Regis to the main line at Paradise, a distance of 22 miles. The object of this construction is avoidance of the heavy grade on what is known as Evaro hill. The distance to be traveled is practically the same as before, but there is a comparatively water level grade by the new route. Construction work is now going forward on all these Northern Pacific projects and will be extended well into the coming year. The Great Northern has set aside several million dollars for feeder construction during 1907, so that railroad building operations will be distributed throughout nearly every section of the State.

OTHER ROADS.

The building of 26 miles of track to the Bear Creek coal fields in Carbon County, and 12 miles at the Amador mine in Missoula County completes the list of such undertakings during 1905 and 1906.

MISCELLANEOUS.

The very cordial reception which greeted the chapter in the last report in which conditions in Montana were set forth by counties, has led to the retention of this feature, and an especial effort has been made to make the data herewith presented as thorough and comprehensive as possible, and to arrange it in such form as will be most advantageous to the prospective settler and investor, and remain at the same time, perfectly reliable and trustworthy. It is, of course, impossible to present all the details of progress and development which follows in bewilderingly rapid succession. The field is a vast one, and in nearly every county there is shown the same wonderful growth and improvement so noticeable during the past six or eight years.

There are localities which seem to be rapidly outstripping others in settlement and consequent agricultural advancement, or in industrial enterprises, but taken as a whole, the entire State is enjoying a tremendous uplift, based upon a substantial and energetic desire to utilize the apparently inexhaustible natural resources of this great store house of treasure.

Nothing seems more certain than that, barring a calamity of a world wide panic, the next ten years will bring to Montana a wonderful increase in population, and marvelous advance in productivity in all branches of industry. Neglected opportunities will be grasped by resident and new-comer. Agricultural and mining, already great, will be still further advanced; railroads, steam and electric, will be constructed; packing houses, woolen factories and beet sugar plants will swell the total of wealth production, affording the most prolific field for profitable investment in land and enterprise to be found in any community on earth today.

To interest the capitalist, the manufacturer, and the home builder in what the State has to offer, and to assist in every way possible the immediate and future development of Montana, is the purpose for which the following information has been gathered, and it is arranged in the form which experience has demonstrated to be the most effective.

BEAVERHEAD COUNTY.

That portion of Beaverhead County known as the Big Hole Basin was for many years, believed to be practically worthless, and it was not until the year 1877 that it became known as a good summer range for horses and cattle. As the country became more settled the wonderful nutritive value of the native grasses became known, and the winter feeding of cattle, finished for the market on wild hay alone, and commanding higher prices than eastern grain-fed animals, became an established industry. No section of the State enjoys a higher reputation for fine cattle, and from 15,000 to 20,000 are brought to the feeding pens each season. None of the stockmen in

THE "NIGHT HAWK" (HORSE WRANGLER) IN HIS NEST.

the Basin run stock on the range in winter, but feed every animal from November until May. Formerly the fat cattle were sold on the coast, but in 1904, 11,000 head were sent to Chicago, where they attracted much attention. The number of feeders has been increased every year, being only limited apparently by inability to secure a sufficient supply to consume the yearly crop of hay which the Basin produces, and hay making operations have been largely extended and there is now no danger of a shortage, as every stockman is prepared to feed plentifully during the longest and hardest winter.

The wild hay lands have become so valuable and their crop so important that irrigation of the benches is being extended, and it is believed that at least 30,000 head of cattle will soon be finished at the feeding pens of the Big Hole Basin each year. The sales of fat cattle from this district during the spring of 1906, aggregated $500,000. Wild hay land with good water rights can be bought for $7.00 an acre.

The Beaverhead Valley is a famous farming region and the soil is very productive. Irrigation is very generally practiced, and very strenuous efforts have been made to extend the area of these operations. If the hopes of the promoters of the Red Rock reservoir are realized, many thousands of acres of high class farming land will be added to the productive area of the County. Land near Dillon that will cut two crops of tame hay or is suitable for grain, is worth from $40 to $50 an acre, and produces record crops.

Mr. G. R. Featherly harvested 147 bushels of oats an acre from eight acres in 1905, and from another field of 20 acres had over 100 bushels an acre the same year. This ranch is three and one-half miles northeast of Dillon, and has been cultivated for 25 years.

J. E. Morse threshed 101,000 bushels of oats from 1,300 acres of land. In the immediate vicinity of Dillon on the Beaverhead River, not less than 36,000,000 pounds of oats were raised in 1906, and marketed at an average price of $1.20 cwt. Beaverhead oats are known to have weighed as much as 54 pounds to the bushel.

During 1906 this county sold $325,000 worth of wool and about $250,000 worth of lambs and mutton.

The chief mineral production is from placer mining carried on by means of dredges. The only operations of this character conducted in 1906 were by the A. F. Graeter steam dredge owned by the Chicago-Montana Gold Dredging Company, which is still working on Grasshopper Creek near Bannack The F. L. Graves was sold to Oregon parties.

The general elevation of the county is high, Dillon being 5,297 feet above sea level, and the Big Hole Basin about 6,000 feet. The population is 8,000, the principal towns and their size being, Dillon, 2,600; Lima, 400; Bannack, 200. The first named is the county seat, a thriving, beautiful town. It has the State Normal School with magnificent buildings and a large attendance; a $10,000 library towards which Carnegie contributed $7,500; and many fine residences.

Manufactures are limited to beer and cigars. The creamery is now closed for want of support by the local merchants. There are no free rural

delivery routes for mail. The total value of all real and personal property is $6,211,951, of which the railroads represent $1,299,065. Farm lands are valued at $1,104,241 and 338,867 acres are assessed. In livestock there are 8,966 horses of which 100 are thoroughbreds, and the valuation is $291,295; 50,902 cattle valued at $873,182; 153,720 sheep, valued at $468,812; and 291 hogs at $1,455. The total value of livestock is $1,634,744. Mortgages to the amount of $126,543 are assessed. While the total value of all real estate and improvements is $2,553,051.

BROADWATER COUNTY.

Population of Broadwater County is now estimated to be 3,400, having increased 200 during the past two years. There are no towns of considerable size, the largest, Townsend, having but 500 inhabitants. Others are Winston, Toston, Radersburg, and Hassel. The principal occupations are ranching and stock raising, with important quartz and placer mining. There are a number of opportunities for developing water power, but none are utilized at present.

Manufactures consist of a brewery at Townsend, which also has one of the best creameries in the State; and a few small saw mills having an output of about 300,000 feet of lumber a year.

Townsend has one State and one private bank, but no public library. There is no county fair. Mineral resources are gold, silver, lead, copper and iron.

Broadwater is one of the best alfalfa regions of the State, the yield being from four to six tons an acre according to the season. Wheat, oats, barley and rye are grown, and blue joint, if cut up by disc plows and irrigated, will yield two to two and one-half tons an acre. No flax is grown. Wheat will average about 30 bushels, and oats 50 bushels an acre. Potatoes and root crops show a remarkable yield. Average prices of farm products were: Wheat, $1.25 cwt.; oats, $1.25 cwt.; alfalfa, $6.00 to $7.00 a ton; timothy and blue joint, $12.00 a ton. Prices for the two latter varieties went to $18.00 a ton in the spring of 1906. No statistics of record yields were obtainable but two circumstances occuring during 1905, give an idea of the value certain farmers place on the lands and location of this county. Two well known farmers, who had been residents of Broadwater for a great many years until they thought they were tired of it, sold out for a good price and went to other states, but within six months both of them returned and paid an advance figure over the price they sold for to regain their old places.

There is but little dry farming in the county and yields and prices are all based on irrigated land. Prices for cultivated land with improvements will run from $20 to $50 an acre. A very ordinary ranch of 160 acres was sold in 1906 for $7,000. There is very little chance to bring more grazing land under cultivation until there is an extension of the present water systems, or new canals built. There is in prospect a very large irrigation project which will sooner or later become an accomplished fact, thus throwing many thousands of acres into a greater productivity.

The Shell ditch taken from the Missouri river five miles above Toston,

was started in 1906, and now has six miles completed. Eventually this ditch will be extended to 12 or 14 miles in length when it will cover some 10 sections of land. This is the only irrigation project which has been undertaken during the past two years.

The farmers of this county are wholly unorganized. Rapid progress has been made in horticulture and some prolific orchards have been developed. Apples pears, plums, cherries and all small fruit are raised in abundance. Several carloads of applies were shipped to Helena and Butte in 1905, and the

CUSTER MINE, WINSTON, BROADWATER COUNTY.

former city is also the market for hay and grain.

Broadwater has shared in the general advance of land values, prices of farm land having increased at least 25 per cent in the past five years. Not more than 10 per cent of the farmers are tenants. The soil is clay, sandy clay, black, and sandy loam.

The city of Townsend supports one weekly newspaper, and has a small rural telephone exchange.

On the first of January, 1906, Townsend acquired the privately owned electric light plant for the sum of $3,500, and since that time has expended $1,500 in extensions and improvements. There was necessity for an engine of larger capacity, and this has also been added. Purchase money for the plant was secured by the issue of warrants at six per cent interest, which are now at par and are being gradually paid.

The most notable feature of interest in this project appears to be that

under private management the lights in the city were all turned off at 12:30 at night. Under municipal management there is an all-night service, costing less than the former; also there were discriminations in rates, some getting lights proportionally cheaper than others, which the new regime has corrected and equalized.

The establishment of the creamery has placed the entire community upon a cash basis, and inaugurated a feeling of good will and prosperity among the business men and farmers which makes Broadwater one of the choice localities of the State. The dairy business can be largely extended, and offers splendid opportunities for profitable investment.

The president of the college at Bozeman is authority for the statement that the Broadwater County high school at Townsend is second in the State for equipment and efficiency.

Broadwater has a total assessed valuation of 2,508,839, and is the only eighth class county in the State. There are 211,507 acres of land assessed, of which 64,767 acres belong to the railroad, listed at $57,935 or about 90 cents an acre. The total value of livestock is $457,987, the number and value of each class being: Horses, 4,080, at $122,405; cattle, 13,923, at $222,058; sheep, 36,740, at $110,523; hogs, 578, at $2,877. and 31 angora goats at $124. Chattle mortgages to the extent of $7,581, and on real estate of $15,162, are assessed while the total value of all real estate and improvements is $1,075,339. Bank stock is assessed at $22,153, insurance premiums at $9,193; machinery at $52,057; stocks of goods at $56,500, and farming utensils, and wagons at $35,132.

CARBON COUNTY.

This is one of the prosperous, progressive and growing communities of the State, having an equable climate, fine soil, and vast resources of coal, oil and minerals. No census has been taken since 1900, but the assessment roll shows 2,400 taxpayers. Owing to the vast holdings of coal land, the assessor has fixed the maximum figure of land valuation at $12 an acre. By this method the various coal companies are required to pay proportionately upon their holdings.

The general elevation of the county is high, Red Lodge having an altitude of 5,700 feet.

No water power is being developed, though there is opportunity for 3,000 to 4,000 horsepower on Rock Creek above Red Lodge.

The principal towns are Red Lodge, Bridger, Joliet, Fromberg, Absarokee, Bear Creek, Belfry and Silesia.

Occupations for the people are found in farming, stockraising, coal mining, together with some prospecting for precious metals in quartz veins, but there are no producing mines of the latter class.

Manufacturing industries consist of the $50,000 flour mill of the Carbon County Milling Company, at Joliet, which is now maintained in constant operation; a $12,000 brewery at Silesia; three creameries, one each at Bridger, Red Lodge, and Fishtail. Brick is made at Joliet. The plaster of

paris and stucco works at Bridger are not in operation on account of the cost of transporting coal from Bridger to the works, some eight miles, and the return haul of the product to town for shipment. It is proposed to locate a new plant at Bridger handy to the coal supply, and haul the gypsum from the quarry until an electric road or possibly a steam road is built in the vicinity of the quarry. This would seem to indicate a good market for the water power above referred to.

The county has five banks, three at Red Lodge, one at Bridger, and one at Joliet, with prospects of two more soon.

A county fair has been officially established at Red Lodge, the county commissioners appropriating $1,000 for promoting it. Mr. A. E. Flagler is president and D. G. O'Shea secretary, of the fair association.

Coal, and that the best quality in the State, is the chief mineral resource of the county. A little placer gold has been produced spasmodically. The gypsum deposits have been proven to be of incalculable value and are only awaiting transportation facilities to be brought into activity on a large scale. During the few years of operation of this property it was conclusively demonstrated that the plaster of paris and stucco from this plant was of an exceptional character that challenged competition throughout all the territory, where railroad rates would permit it to be shipped. The plant was closed in 1904. The development of the Bear Creek coal fields has resulted in the erection of the new town of Belfry, about eight miles up the Clark's Fork river from Bridger and the construction of a railroad from that point to the coal fields, some twenty miles. This road was completed in 1906, and shipment of coal begun.

Indications of oil in Carbon County are very strong. There are places on Cottonwood Creek where, if the earth is excavated to a depth of one foot, the soil is so saturated with gas that it can be lighted. A square hole two feet deep was boxed in with a half inch gas pipe protruding, and from this enough gas escaped to keep a steady flame. With all these signs, and more, there are no producing wells.

Carbon is fairly well developed agriculturally, though by no means to the limit. Very little land is cultivated without irrigation, but there are localities near the mountains where there are seepages or an extra quantity of moisture where dry land growing of wheat is becoming more and more popular, and the yields run from 20 to 35 bushels an acre. Irrigated lands yield from 30 to 35 bushels an acre. Sowing alfalfa with oats is practiced to some extent, and the second year shows a good, solid crop of alfalfa for three cuttings. Oats are not grown without water, and notwithstandig the fact that they are generally sown on poorer land than wheat, the average crop will run from 50 to 60 bushels an acre. Very little barley is raised, though experiments with a hulless barley, new to this section, did extra well.

Prices of farm land have advanced materially as the instances mentioned will show. Within the last year $10,500 was paid for 160 acres near Joliet, in Rock Creek Valley, and $10,000 has been refused by others for like quantities. J. Dalhstrom, who lives two miles south of Bridger, bought 160 acres

in January, 1906, for $47.50 an acre, and in July of the same year, refused an offer of $100 an acre for it.

In 1898 Dr. Allen, of Joliet, bought 160 acres for $2,000, and in 1906 had a standing offer of $16,000 for it for over two months. The ranch rents for $1,000 a year and in 1905 produced crops valued at $2,800.

Simpson Brothers, 27 miles above Bridger, at an altitude of 4,000 feet, raised 6,500 bushels of wheat which sold for $1.65 cwt., from 200 acres of land.

Around Fromberg one quarter section is held at $15,000, although no sales have been made at this figure. One ranch near Joliet was bought for $3,800 five years ago, and in 1906 sold for $8,000, while along the railroads all land has doubled in price in the last year. This enormous advance is perhaps due to the hopeful possibilities of the sugar beet industry more than to any other one thing.

On Rock Creek and Clarks Fork about 2,400 acres of sugar beets were planted in 1906 and did remarkably well, the greatest handicap being the scarcity of field labor.

On the Stillwater River the ranches are not as desirable for general farming as in the two localities above mentioned, but they are even better for stockraising, as they are contiguous to better and more extended range.

Carbon county imports no farm produce except meats, and the grain crops keep ten threshing outfits busy during the season. Not more than five per cent of the farmers are tenants.

Flax is said to have been a failure, though it is doubtful if it has been given a thorough trial.

The fine climate and rich soil of Carbon make horticulture and truck farming highly successful, and apples, pears, plums, peaches, water melons, canteloups, and the small fruits are grown to perfection. A little tobacco is grown for home consumption and some corn.

Bees are said to be so numerous as to be a nuisance, and in places swarms have escaped and are hiving in the caves of mountain rocks.

Besides the Rocky Mountain Bell Telephone line, which extends from Billings to Red Lodge and Bridger, the farmers have a co-operative line from Joliet to Silesia, and are building one from Red Lodge to Linley. The Mutual Telephone Co., of Billings, has a line from Billings up Rock Creek and Clark's Fork valleys which supplies most of the farmers in those sections.

Co-operation is very popular in Carbon County among the farmers, two mercantile institutions conducted in this manner being now in operation.

The assessed valuation totals $4,359,350. Lands as to character, area, and value are: Grain land, first class, 22,000 acres at $264,000; second class, 22,000 acres at $220,000; hay land, first class, 25,000 acres at $200,000; second class, 40,000 acres at $280,000; grazing land unfenced, 43,488 acres at $187,547; and 5,000 acres of timber land at $12,500. Improvements on farms are assessed at $399,250; 7,614 horses are valued at $249,115; 26,500 cattle at $384,911; 104,610 sheep at $314,726; and 1,199 hogs at $4,796, a total of $953,548. Mortgages aggregate $72,968, and the total value of real estate and improve-

ments is $2,068,502. Goods and merchandise are assessed at $222,313, net proceeds of mines at $150,000, farming utensils and wagons at $142,865, bank stock at $97,000, and insurance premiums at $13,707.

CASCADE COUNTY.

In agricultural and industrial development, in population and wealth, Cascade County ranks with the very best of these political divisions of the State. The payrolls in various manufacturing enterprises furnish a stable volume of business, while soil and climate yield bountiful returns to thousands of prosperous farmers. Great Falls, the county seat, is the second largest city in the State, but is equaled by no other in civic pride and urban decorations, its extensive area of parks and street boulevarding, with ornamental shade trees, giving a most pleasing and impressive appearance. This city is the location of the Boston and Montana smelter, with 1,000 employes, and with improvements already begun that will necessitate half as many more in the project of doubling the capacity of the works.

Hours of labor are universally eight a day, and the wages are $3.00 and upwards.

Next to the Washoe in Anaconda this is the most important smelter in the Northwest and, by reason of cheap water power furnished by the Missouri River, is one of the most economically conducted plants in the world. For the fiscal year ending in 1905 the Boston and Montana Company, including mines and smelters, is said to have paid dividends at the rate of 156 per cent on a capitalization of $3,750,000, or $39 a share on shares having a par value of only $25.

The Royal Milling Company flour mill at Great Falls, built in 1892, has run steadily day and night for seven years until last year, when the night shift was discontinued. It has a capacity of 500 barrels of flour every 24 hours, an elevator holding 200,000 bushels, and represents an investment of $120,000. The motive power is water derived from the Black Eagle Falls; when running full time 30 men are employed, including the office force, on eight hour shifts. In 1905 about 260,000 bushels of wheat were ground, which includes at least 100,000 bushels shipped in from North Dakota. Extensive efforts, including substantial cash prizes, have been made by the company to induce an extension of the wheat acreage of the county, but as shown above there is still a large deficiency of home grown grain.

It is estimated that in 1906 250,000 bushels of wheat were grown in Cascade from about 20,000 acres of land; and 400,000 bushels of oats from 10,000 acres. This was a decidedly poor year. The dry land farms of the county will yield from 13 to 40 bushels of wheat to the acre; an average yield in an average year should be about 25 bushels. In 15 years there has never been an entire crop failure on non-irrigated farms and on two seasons in that time have witnessed a reduction to half a crop as the result of drouth.

Cultivated land without water is worth about $15 an acre; while land with water is held from $30 upwards.

Proposed government reclamation projects and the advent of the new Billings and Northern railroad, now under construction, in conjunction with

the many natural advantages of this region, hold out the brightest prospects for the future of Cascade County. The soil is rich and productive, the climate good; there is unlimited water power and vast deposits of coal for manufacturing purposes, as well as an unsurpassed market.

The American Sapphire Company, capitalization $750,000, of which Mr. H. O. Chowen of Great Falls is manager, and whose mines are located on Yogo Creek about 16 miles from Utica in Fergus County, has opened a sapphire cutting establishment at Great Falls with Mr. J. Henry Crittenden in charge. The mines are those formerly owned by Messrs. Burke and Sweeney, and were acquired by the company in May, 1906. Cutting machinery to employ 10 men has been installed in the Great Falls plant, at which operations were begun October 22, 1906. About 500 carats of saleable material valued approximately at $1,000 is now being shipped every day, and this will soon be doubled. A mill for the extraction of sapphires was built at the mines during 1906 at a cost of $30,000. The total production of all sapphire mines in the State for the year is estimated to be $250,000.

In the winter of 1905 a creamery was built at Manchester which, although supplied with cream from but few cows, has been a satisfactory investment. In September, 1906, some twenty cheeses were made, exhibits of which were awarded first prize at the Northern Montana Fair. This industry will be extended and operated fully during the season of 1907.

There is also a grist mill in process of construction at Manchester which will doubtless be in operation in 1907. It will furnish a market for grain raised by farmers on the west side of Sun River, and to avoid their present necessary long haul to Great Falls, in order to cross Sun River a ferry will be established.

Cascade is one of the two second class counties in the State having a valuation of $16,468,167. The total number of acres of land assessed is 850,386, classified as to character, area and value as follows: Grain land, first class, 90,000 acres at $450,000; second class, 65,000 acres at $650,000. (This apparent discrepancy is wholly unexplained.) Hay land, first class, 55,000 acres at $440,000; second class, 60,000 acres at $360,000; grazing land, fenced, 180,000 acres at $540,000; timber land, 300,645 acres at $1,340,621; and railroad lands, 99,741 acres at $194,517. A total of 8,331 horses are valued at $300,976, which includes eleven thoroughbreds at an average of $388.18 each. There are 48,077 cattle of all kinds, valued at $693,271; 116,772 sheep, valued at $347,321; 531 hogs at $2,655. The full livestock assessment is $1,344,233. The value of real estate and improvements is $3,975,138, and mortgages and bonds are assessed at $105,534. Net proceeds of mines are taxed at $17,084, machinery at $491,485; the franchises of water, street railroad, electric light, gas and express companies at $10,000, and their property at $48,151; goods and merchandise at $658,107, and farming utensils and wagons at $118,879.

CHOUTEAU COUNTY.

Since 1900 the population of Chouteau County has increased probably 20 per cent, and this has been very evenly distributed between the town and

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THE X I T COOK AT WORK ON HUNGRY CREEK, MONTANA.

country districts. The estimate is now 13,129. Zortman, the new mining town in the Little Rockies, was founded since 1900, and now has a population of about 300. From all indications this town will equal Kendall in Fergus County as a gold producer. The ore is cyaniding, mills are running and many fine properties are being developed, the values averaging better than those at Kendall.

Near Warwick, Mahlon Barnes has been working on a silver claim in the Bear Paw Mountains, from which some shipments have been made, and it promises to become a paying mine. This is the first producing mine that has been operated in the Bear Paws, though the country has been prospected more or less for 20 years. It is said that Pike Landusky, who was killed by one of the Currie Brothers, was the original discoverer of the Little Rockies mines, and he and his partner, Peter Zortman, for whom the town of Zortman was named, were the first to discover paying mineral in the Bear Paws. Also in the vicinity of Warrick a lot of coal land has been located by the Republic Coal Co., which is supposed to be made up of Milwaukee railroad officials. The coal vein is said to be 20 feet thick.

The chief increase in agricultural settlement has been along the Milk River Valley from Harlem east to the county line, and on Sage Creek, which district is now becoming highly cultivated.

Farm lands have increased in value in the last five years probably from 50 to 100 per cent, the irrigated ranches being the greatest gainers. Grain is still shipped into the county, not enough being raised to supply the local demand, but there is generally a surplus of hay raised which is marketed in other parts of the State. Milk River Valley is the chief producer of both hay and grain. The Highwood Mountain country is second.

What is known as the Bear Paw district comprises something like 30 square miles, but probably not more than one-twentieth of this area is cultivated. It is settled by small stockmen, who are using it for grazing and wild hay land. Harlem shipped 20 train loads of blue joint hay to Seattle in 1905, and a large amount was sent to Montana points also. Some stockmen, who do not do any farming of consequence, ship in prairie hay from North Dakota for limited feeding to stock such as saddle horses, but the county produces more hay than is consumed, including the supply for Fort Assiniboine, a cavalry post.

Wages for farm labor are from $35 to $40 a month, some extra men doing special work getting as much as $60 a month. Nearly all crops are grown, but the experiments with flax are too limited to furnish a record. The great hope now is the completion of the Milk River irrigation project by the Government, elsewhere described. The farmers have formed a Water Users' Association, but are becoming disheartened over the long delay. The drouth of the past two years has temporarily put a stop to the construction of reservoir and ditch building, and it has also caused a decrease in both the cattle and sheep in the county, as they had to be marketed on account of short forage. The fencing up of the county by both new and old settlers has also

militated against stock raising. Heavy floods in 1906 washed away many reservoir dams, causing great loss.

Improved lands in Milk River Valley are worth from $15 to $25 an acre, depending upon local conditions and proximity to the railroad. Other sections may be estimated in a very general way to be worth from $10 to $15 an acre. These prices will be more than doubled upon the completion of the irrigating projects.

Considerable attention has been given to irrigation by means of pumping gasoline engines in Chouteau County. McClelland Brothers, of Judith P. O., are putting in a 20 horsepower gasoline pumping plant on the Missouri River about 60 miles south of Havre, which they expect will cover from 400 to 500 acres of land. Frank Jones, of Warrick, is also installing a plant of sufficient size to cover 300 acres.

Havre is the principal town and has about 3,200 population. The water plant is owned by the city and cost $65,000. Not less than $300,000 worth of business blocks and residences have been erected during the past two years since the fire of Jan. 14, 1904, and some $2,000 has been expended in grading the streets. House rent is exorbitant. Instances were cited where a dwelling costing $500 to build rented for $20 a month. Another costing $2,100 rents for $37.50 a month. A business block on one of the most prominent corners which cost $7,000 to build rents for $250 a month, and is then sub-let. A fine public library, supported by the city, is open continuously. The electric light and telephone company is a private affair with no long distance connections except with Fort Assinniboine. Unlimited business service costs $3.50 a month, while party line service for residences costs $3 a month. Electric lighting costs 18 cents per kilowatt hour.

Industrially, Havre is supported principally by the payroll of the railroad and repair shops, the latter being one of the largest in the State.

The Montana Concrete and Hollow Block Company have made 100,000 cubic feet of cement blocks during the past two years, most of which were used in Havre, though some were shipped as far as Glasgow. They have proven highly satisfactory, being conceded to be better proof against fire, frost and heat than brick, the hollow feature furnishing an air space. Some $12,000 is invested in this business.

A $10,000 brewery which was built two years two miles from town, was burned in the spring of 1906, but will be rebuilt. Ten thousand tons of coal were mined each of the years 1904 and 1905, and seems to justify all that has been claimed for it as to quality. It is used exclusively at Havre for steam and domestic purposes.

Small fruits are grown, and while but very few fruit trees have been planted those that are growing are proving the practicability of orcharding in the county.

The assessed valuation of all property is $11,104,429, of which the largest item is the railroad valuation, that being fixed at $4,542,755. Real estate and improvements come next at $2,912,083, and livestock furnishes the next largest at $2,597,081, levied upon a total of 586,278 head. This is made up of

11,132 horses at $343,205; 51,445 cattle at $838,233; 523,421 sheep at $1,414,510; 173 hogs at $865 and 107 Angora goats at $278. Insurance premiums are taxed at $32,208; bank stock at $282,028; goods and merchandise at $259,508; farming utensils and wagons at $112,844; machinery at $61,580; mortgages and bonds at $152,580. The total number of acres of land assessed is 491,774 acres, of which 45,290 acres is returned as second class grain land valued at $310,862, and 446,241 as fenced grazing land valued at $1,121,751. There are 243 acres of railroad land taxed at $2,450.

CUSTER COUNTY.

The soil throughout this county is a sandy loam with occasional tracts of very rich black loam. It is all exceedingly productive if water is applied and everything grown in the middle western states can also be grown here, while the yields per acre are much greater. The area of irrigated land is estimated at 30,000 acres, water being generally provided by ditches. Within the last year the idea of pumping water by gasoline engines for irrigating purposes has been put into effect, but being still in an experimental stage no definite figures of cost or results can be given. In one instance a 15 horsepower gasoline engine is raising 2,000 gallons of water a minute, a lift of 12 feet, at a cost of one gallon of gasoline per each horsepower in a ten hour run, and the owners express entire satisfaction.

Farm lands under the two important canals in the county are valued at from $25 to $40 an acre. Small fruits, such as strawberries, raspberries and currants, thrive most luxuriantly, while watermelons and cantaloupes raised near Miles City have acquired more than a state reputation. Splendid celery is also raised, and its cultivation is being largely extended.

The soil is especially adapted to alfalfa, which often produces in three or four cuttings five tons to an acre worth from $8 to $12 a ton. There has been considerable success in some parts of the county with dry farming, particularly along the Little Missouri River, where as high as 70 bushels of oats and from 30 to 35 bushels of wheat have been raised to the acre. The finest of potatoes are also grown. However, it is always better to have water for the crops if it is possible to get it. Prices of dry land farms run from $10 to $15 an acre. Wheat, oats and some hay is shipped in to supply the local demand. So small is the production of grain that there is not a threshing machine owned in the county.

The price of wheat in 1905 was $1.50 a hundred and oats were from $1.25 to $1.65, remaining about the same in 1906. There has been practically no increase in the area of cultivated land in the past two years.

Six million pounds of wool were shipped from Miles City in 1905 and in 1906 this was increased to 8,000,000 pounds, the product from 1,000,000 sheep. In this district there is a practical illustration of the change now going on in the cattle industry throughout the State. On eight large outfits belonging to cattlemen the assessment roll for 1906 shows an aggregate loss of $200,000, caused by the breaking up and settlement of the range formerly controlled by them and its occupation by smaller operators. But to counterbalance this loss

there was a gain of $400,000 in the value of sheep. However, Custer County is a land of large individual holdings. Six men own from 50,000 to 100,000 acres each. One man owns 110,000 acres, another 35,000 acres of deeded land, and still another 90,000 acres. Sixty thousand acres were sold at $3.35 an acre, and 21,780 acres were sold for $87,120 in 1906. There is not a tenant farmer in the whole county. Custer County does not maintain a fair association and no free rural mail routes have been established. The Fort Keogh Military Reservation, of which Col. Bomus is commander, occupies about 100 square miles.

One of the famous institutions of the State is the great horse and cattle sale conducted at Miles City by Mr. A. B. Clarke. The business was begun by taking horses from Montana and other States to the Omaha market in 1892, and in 1895 a sale was held in St. Louis. Later, Mr. Clarke conceived the idea of bringing the buyers to the horse market and his good judgment has been fully vindicated by the unqualified success of his sales at Miles City since 1902. Three sales were held that year and one has been added each year since. so that in 1906 six were held. The first of these was in May, at which $151,000 worth of horses and cattle were disposed of. Cattle were sold to the number of 1,000 at the sale in 1905, none having been handled before. At the May sale in 1906, 1,100 head were sold in three hours. Of 3,000 head of horses disposed of at this sale but one carload was Custer County horses. At the June, 1906, sale fully 75 per cent were Montana horses, the balance coming from Washington. Of the 26,000 horses sent out of Montana in 1905, Mr. Clarke sold 10,000, and in 1906 this number will be doubled. Sales were made very rapidly, 800 horses being sold on one occasion in an hour and a quarter, and at another time 259 were sold in 15 minutes

Leading towns are Miles City, Terry and Ekalaka. The first named is the county seat, and has two banks, while the others support one each. Miles City has a Carnegie library which cost $12,000, the city contributing $1,000 a year for its support. A county high school costing $35,000 was erected in 1906. Manufactures consist mainly of two saddle factories with an investment of $25,000. There are two weeklies and one daily paper published at Miles. Owing to the location of division headquarters of the Milwaukee railroad at that place, Miles City has taken on great activity and is rapidly growing, four new additions comprising 135 acres having been added within a year. The population is 3,000, and will be largely increased. Under the system of scattering the State institutions, the Reform School was located here and is being well conducted. Telephone lines aggregate 163 miles. No creameries have been established in this territory, though there is no doubt that it offers one of the finest opportunities in the State for such an enterprise. The total valuation of Custer County is $7,090,461, the largest single item being $3,315,025 for livestock, levied upon 530,877 animals. These are classified and valued as follows: Horses, 18,672 at $530,592, which includes 114 thoroughbreds at $129.82 each; 75,445 cattle at $1,476,495; 436,662 sheep at $1,307,448; and 98 hogs at $490. A total of 1,331,717 acres of land is assessed, of which 670,940 acres is railroad land, assessed at $281,794, or 42

cents an acre. All the balance of the land is assessed at less than one dollar an acre. Mortgages and bonds are returned at $39,556, while the value of real estate and improvements is $1,806,832. An irrigating ditch 20 miles long is assessed at $200 a mile.

DAWSON COUNTY.

Dawson County is essentially a stockraising locality, although the cultivated area will be vastly increased in the near future. There are few farms and practically all farming is done without water, there being but one privately owned ditch in the county. On these dry farms a yield of 50 bushels of oats to the acre or 20 bushels of wheat is common in a good year. As instances of the productivity of the soil, Kemmis Brothers threshed 45 bushels of oats an acre in a season when no water was used after seeding, and under the same conditions 25 bushels of wheat an acre were grown. In 1905, 300,000 bushels of grain were raised in the Yellowstone Valley, most of it without water. Corn is grown successfully in all the valley in ninety days, this also being true of that part of Custer, Rosebud and Yellowstone Counties. Not enough hay or grain is grown to supply the local demand, and large quantities are shipped in mostly from North Dakota. This is another condition which will soon be changed. Small patches of flax have yielded prolifically, but there is no market, as the production is too limited to attract buyers. Root crops of all kinds grow in prodigious quantities and sizes, the onions grown by Stewart Brothers taking first prize at the State Fair.

The popularity of Dawson County is shown in the fact that while six years ago there were only 700 taxpayers, there are now over 2,000, of which 550 have been added during the past two years.

Cultivated dry land is worth on an average from $3.50 to $5.00 an acre, and none is held at more than $10. Land under the new government canal is estimated to cost from $30 to $40, though these figures may be changed. The value of grazing land has increased from one dollar an acre three years ago to three dollars, and during 1906 new land in the Yellowstone Valley, which it is expected will be watered by the canal, has been sold as high as $18 an acre, to which must be added the cost of construction of the water system. Not over one-third of the Lower Yellowstone Valley is now under cultivation, but the government canal will cover about 75,000 acres. There are about 300 members of the water users' association, a full account of which is given in the chapter on Irrigation. As an adjunct to the canal work a telephone line has been constructed from Glendive to Mondak, a distance of 90 miles. The line is constructed in a substantial and durable manner, and its erection has resulted in an innovation in telephone service and charges. The Government caused its line to be connected with local telephone companies at both Glendive and Mondak, and allows the public to use it for the nominal charge of ten cents, which is paid to the local exchanges.

The completion of the irrigation works will result in the rapid development of Dawson County, though there will always be a large territory suitable for nothing but grazing. Here again is a splendid opening for a creamery, there being none at present.

There is a wide awake fair association, of which Senator George McCone is president and W. B. Foster secretary. The County Comissioners allow $1,000 a year for premiums.

Glendive, the county seat, Wibaux and Sidney are the principal towns. There are six banks, of which three are in Glendive. In the fall of 1905 an election was held to decide upon the establishment of a county high school at Glendive, in which 562 votes were cast in the affirmative and only 62 in the negative. For this school a building was rented, but an $18,000 public school has just been completed. There is no public library.

In 1904 the city voted $45,000 of bonds for a muncipal water system, which is now in operation, and $5,000 for a sewer system. Water for the city is pumped from the Yellowstone River to a reservoir from which the mains are supplied by gravity. In previous years there has been no general supply. Many of the citizens bored wells, in some instances 100 feet deep, from which the water is pumped by windmills. Others were supplied by peddlers at the rate of 25 cents a barrel, this water being hauled from the river.

Dawson County, by reason of its increased valuation, has been advanced one point in classification, the total reaching this year $5,287,002. A valuation of $112,092 is placed on 301,734 acres of railroad land, an average of a little over 37 cents an acre, and of $297,537 on 535,583 acres not classified, an average of about 57 cents an acre. The total number of acres assessed is 837,317, upon which the improvements are valued at $28,045. The livestock returns show 13,864 horses at $535,456, which includes 77 thoroughbreds at $115.58 each; 57,679 cattle at $1,079,027; 396,341 sheep at $1,170,179; and 289 hogs at $1,523, a total valuation of $2,786,185. The railroad aside from its land holdings, is valued at $1,054,092; bank stock at $6,808; goods and merchandise at $109,735; farming utensils and wagons at $57,395; machinery at $29,272, and mortgages at $60,897, while the total of real estate and improvements is $1,060,200.

DEER LODGE COUNTY.

Deer Lodge is the smallest county in Montana, having approximately but 465 square miles of territor within its boundaries and probably not more than twenty miles square of this is cultivable. Its mountains, however, are rich in mineral, but, again, the business of mining suffers a serious handicap on account of the lack of transportation facilities to the mining regions, which lie from 20 to 30 miles from the railroads. Anaconda, however, is the seat of one of the most important activities in the State, and, it is claimed, there is nothing of its kind on quite so extensive a scale in the world as the Washoe smelter. The magnitude of this concern will be inferred from its estimated cost, which is placed at above $10,000,000. These works are of such magnitude and constructed with such perfection as to have replaced the old smelters of the Anaconda Copper Mining Co., and treated during the year 1905 1,626,306 tons of copper ore from its own mines, and slags, slimes and flue dust taken from the old works, at a difference in cost to the mining operations of the Anaconda Copper Mining Co., after paying the lease rental

of the new smelter, of $1.59 per ton, which represents the increased savings in metal values and decreased costs of handling the materials as compared with the old works in the last year of their operation. The aggregate saving in 1905 amounted to $2,583,549.71.

The salvage from buildings, machinery, etc., together with the metal values that have been recovered from the dumps at the old works since they were abandoned, showed a net profit on March 1, 1906, of $3,645,625.28, and there is yet an estimated net profit to come from the dumps of $1,750,000. Practically the entire value of the old works has been recovered already at the new works by way of selling off the machinery and working over the slag dumps and slime ponds which contained these lost values.

The Washoe smelter treated for all companies during 1905 2,650,868 tons of ore and other cupreous material. Of this 1,470,694 tons of ore were from the mines of the Anaconda Copper Mining Co. at Butte; 44,566 tons of slimes, 23,900 tons of flue dust, 82,789 tons of slag and 4,357 tons of miscellaneous cleanings from the old works were treated, from which there was produced 95,443,730 pounds of fine copper, 3,116,881 ounces of silver, and 19,165 ounces of gold in the form of anodes which were shipped to eastern refineries.

In the year 1903 flues and an enormous smokestack was built which cost $750,000. This expenditure was incurred for the purpose of saving a large part of the dust that formerly went into the atmosphere. During the year 1905 61,016 tons of flue dust were recovered, from which large quantities of metal and arsenic were extracted. The arsenic plant has proven entirely successful and a ready market at good prices is the reward.

In the year 1904 the Washoe smelter treated about 5,500 tons of ore every 24 hours; in 1905 it treated over 8,000 tons, and during 1906 it is believed that the year's record will show more than 10,000 tons treated daily.

An interesting record of its operations for the year 1905 follows:

Copper produced per month	$ 2,780,000
Gold produced per month	95,000
Silver produced per month	432,000
Payroll per month	215,000
Products per year	39,684,000
Montana's mineral output, 1904	60,591,000
Number of men employed, average	2,450
Ore from Butte daily	8,000 tons
Coal consumed daily	600 tons
Coke consumed daily	400 tons
Limerock consumed daily	1,600 tons
Fluedust consumed daily	190 tons
Slag and tailings	9,000 tons
Copper produced daily	500,000 lbs

Some of the subsidiary departments of the Anaconda Copper Mining Co. located at Anaconda are the Montana Hotel, one of the most beautifully appointed and best conducted hotels in the State; the street railway, a brickyard, which makes a product of such perfect quality as to find a market beyond the borders of Montana; a brewery, the townsite a mammoth commercial estab-

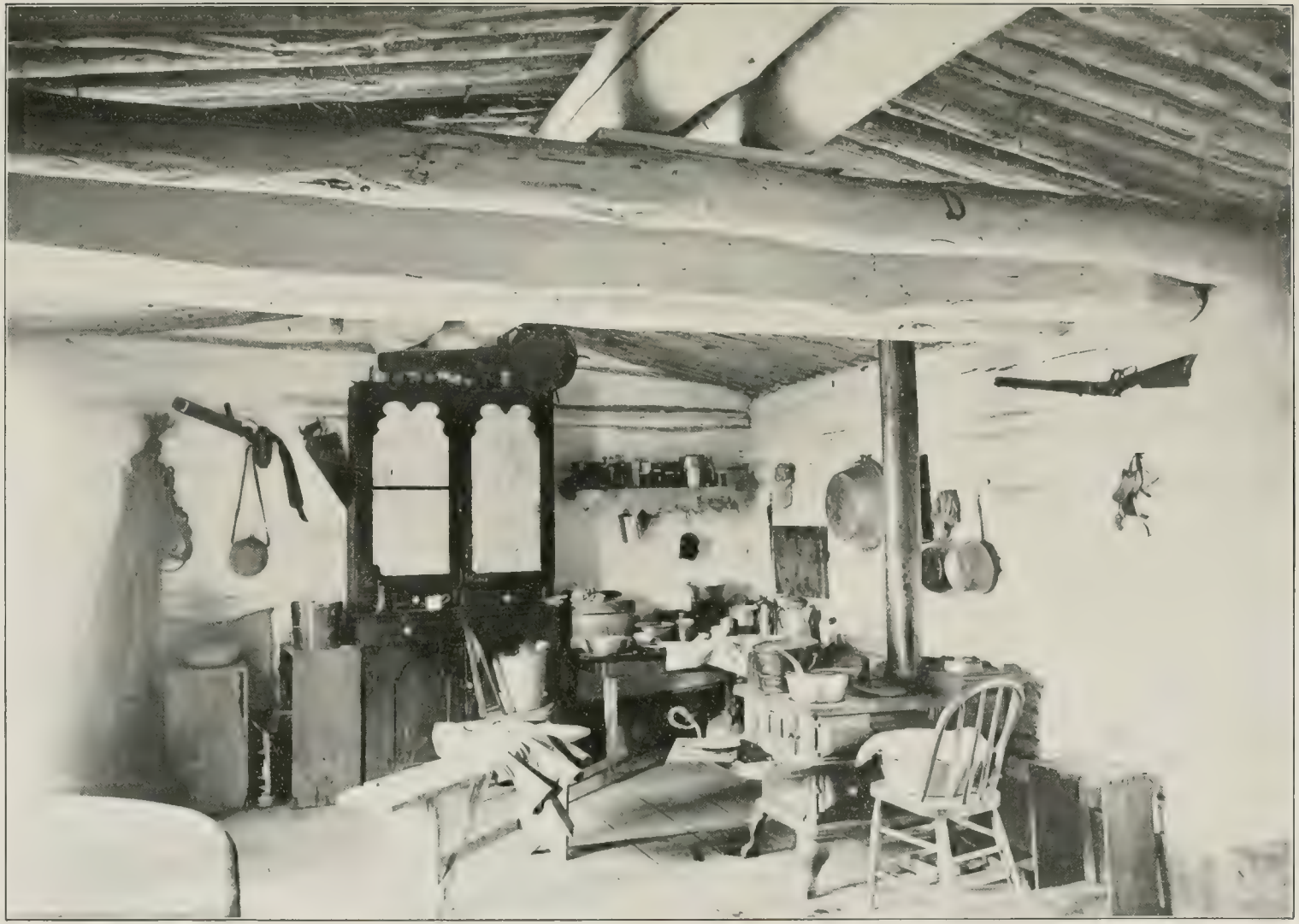
lishment and the general offices of the Butte, Anaconda and Pacific Railway, which operates between Butte and Anaconda. During the year 1905 this company transported 3,994,507 tons of ore and freight, 175,423 passengers, and showed gross earnings of over $1,000,000, nearly $300,000 of which was net profit.

The general offices of the A. C. M. Co. are also located at Anaconda.

The next most important of the industrial enterprises in this stirring little county are those conducted by Hon. W. R. Allen of Anaconda. Just across the low range of mountains dividing the Big Hole from the Deer Lodge Valley lies the French Gulch mining district. More or less placer mining has been done in this gulch since its discovery by some Canadian French prospectors in 1864. Some of the placer claims yielded large returns even in those days but when old-timers could no longer realize from 50 cents to $5 per pan for their labor enthusiasm gradually died out and operations waned for some years. In 1896 Mr. Allen started hydraulic and ground sluicing work in this gulch some 20 miles south of Anaconda, and later the French Gulch Dredging Co., of which Mr. Allen was secretary and manager, installed a dredge which operated three full seasons showing handsome profits; but, unfortunately, the new government classification of mineral and agricultural lands, under which a new survey was had, the ground of this company was brought under the agricultural classification and mining on the ground where the dredge was located was brought to a forced stop and the dredge sold to a Kansas City company which is now operating it in the Jefferson River near Jefferson Island. In 1904 Mr. Allen organized the Allen Gold Mining Co., which is still conducting a profitable placer mining business in the gulch by hydraulic and sluicing methods. In addition to this property the company has undertaken the development of several quartz claims, one of which is already a steady producer of gold, silver, copper and lead values which are extracted by the East Helena smelter.

The Allen Gold Mining Co. has also purchased from the government 60,000,000 feet of timber which lies in the Hell Gate forest reserve in this county. At the expense of something like $50,000 a flume 16 miles long has been built from the head of American Gulch and following the continental divide to McCune Pass, where it crosses the divide and over into Mill Creek, terminating seven miles from Anaconda at the B. A. & P. railway. This flume furnishes the means of transportation for the products of this forest to the railroad, which carries most of it to the mines at Butte. About 250,000 mining stulls ranging in diameter from 8 inches to 2 feet, and 16 feet long, which, in board measure, would mean between 7,000,000 and 8,000,000 feet, are sent down this flume each year, besides a couple of million feet of sawed timbers, 300,000 to 400,000 lagging poles, a million and a half of dimension lumber and 10,000 cords of fuel wood. A vast number of green poles are also sent to the Washoe smelter which are burned in the converters to carbonize the copper. From 125 to 150 men are employed the year around in these mining and timber operations.

The county has expended large amounts of money in road building from



INTERIOR OF AN OLD-TIME CATTLE RANCH CABIN.

Anaconda to the Big Hole Basin in Beaverhead County with a view to inducing the prosperous ranchmen and stockmen to do their shopping and trading at Anaconda, and the results are most fruitful. The famous blue-joint fattened butcher cattle come over this road, and some are shipped to the Seattle market every year with an ever increasing demand. Auxiliary to this enterprising work the Anaconda and Big Hole Telephone Co., of which Mr. Allen is president, in 1905 constructed a telephone line from Anaconda to Wisdom, a distance of about 65 miles.

The city of Anaconda has a population of about 12,000 people, and probably there are not more than 14,000 in the county of Deer Lodge. At this county seat is one of the finest court houses in the State, there are no better schools, churches of many denominations, a $30,000 public library, and a fire department that is the pride of its people.

Although of limited area, but five counties in the State exceed Deer Lodge in valuation, her total for the year being $8,105,527. Land to the extent of 110,574 acres is assessed at $297,974, the character, area and value being as follows: Grain land, second class, 7,264 acres at $50,848; hay land, second class, 22,677 acres at $113,385; grazing land fenced, 36,087 acres at $108,251; unfenced, 8,500 acres at $8,500; timber land, 18,018 acres at $5,272; and railroad land, 18,028 acres at $11,718.

Mortgages are assessed at $79,216, while the value of real estate and improvements is $5,612,670. Five mining and irrigating ditches aggregating 32 miles in length are taxed at $4,000 a mile; net proceeds of mines, $890; machinery, $712,775; bank stock, $127,714; insurance premiums, $40,928.

Livestock includes 2,095 horses at $65,627, 3,305 cattle at $63,164, 908 sheep at $2,732, and 305 hogs at $1,371, a total of $132,894.

FERGUS COUNTY.

Fergus County has an area of approximately 9,500 square miles, about the same as the State of Vermont and contains the great Judith Basin, a most fertile and beautiful country some sixty miles long by fifty miles wide. It is the proud boast of her people that, if they were cut off from intercourse with all the world, the resources of the county are so vast and varied that they would be able to supply all of their own necessities and many of the luxuries of life. Although there are still thousands of acres of government land, most of that available for settlement or susceptible of cultivation has been appropriated. The conditions are such, however, that a population many times the present 15,000 can be readily supported. The opening of railroad communication only a few years ago has already had a marked influence in developing the county. Lewistown in 1904 had a population of 2,500 and now has 3,500. Kendall has doubled in two years and in 1906 had 1,000; Moore, only two years old, has 400; Gilt Edge, 500; Utica, 350; Stanford, 300; while Maiden, Garneill and Straw have 75 each.

The railroad now building from Billings to Great Falls will be of still further benefit in bringing in new people and providing a market for farm products. It has recently developed that the Rock Creek bench in the vicinity

of Moore would produce good crops without water, and two hundred families have settled there since 1904. Every quarter section of government land in this neighborhood has been located, a great many since Jan. 1, 1906.

It is estimated that there are 30,000 acres on the bench which can be cultivated. One hundred and fifty carloads of wheat were shipped from Moore in 1905, the product of this dry land. The yield in 1906 was from 15 to 18 bushels an acre, and the price paid for soft wheat was 43 cents, and for hard wheat 52 cents a bushel. This was in November, but the market at this time showed a tendency to advance. The grain products of this region are handled at Moore in a modern elevator of 30,000 bushels capacity.

The milling for the county is done by the Judith Basin Milling Company at Lewistown, whose mills have a capacity of 250 barrels a day. In 1905 operations were conducted for eight months, all on local wheat. Several trainloads of this flour were exported for Oriental trade. In connection with the mill there is an elevator holding 50,000 bushels of grain.

There are 28,217 acres of first class grain and hay land in the county, all of which is irrigated; 58,055 acres of the same class that is not irrigated; 660,477 acres of grazing land and 124,244 acres of railroad land, most of which is now grazed. Considerable of the latter will some day be cultivated, either as dry land or with water. The irrigated, cultivated land is worth from 30 to 50 an acre, the dry land from $15 to $25 an acre. Grazing land that may some time come under cultivation is worth from $8 to $15, while the land that will never be anything but grazing land is worth $3. Values on first class land with water have increased 100 per cent in two years; on dry land and grazing land, 60 per cent in the same time. Irrigated land will produce 60 to 70 bushels of oats, or five tons of alfalfa to the acre. Practically all of the wheat is grown on dry land, and summer fallowing is practiced.

In the Judith Basin the soil is a rich black loam, with a clay or gravel subsoil, and there is no alkali. The sod is somewhat tough, but rots quickly, and, generally speaking, the soil is easily tilled. There are many large holdings now devoted to cattle and sheep raising, some of which can be bought in small lots for reasonable prices and readily converted into grain farms to the great advantage of all concerned.

The Fergus County Irrigating Company has 5,000 acres of land two miles north of Utica, upon which they are boring artesian wells in the hope of striking sufficient flow of water for irrigation purposes. The president of the company is Mr. N. J. Littlejohn and Mr. John B. Ritch is secretary. Success in this enterprise will induce many farmers in that vicinity to undertake similar wells.

Prices for wheat are low in 1906, but can no doubt be materially advanced. Butter, eggs, hay and oats command good prices at all times. The climate is such that apples, plums, cherries and small fruits do remarkably well, and watermelons are also grown. The summers are not exceptionally hot, and there is very little zero weather in winter. Manufactures consist of flour, beer, brick, cement blocks and lumber. Cottonwood and Moore each have a creamery, and one at Lewistown is being rebuilt after having burned.

No county fair was held in 1906, and there are no free rural deliveries of mail. There are two banks at Lewistown, two at Moore, and one at Kendall. All of these pay 5 per cent interest on time deposits. There is a Carnegie library housed in a $12,000 stone building.

Mineral resources are gold, silver, lead, copper and coal. The cyanide gold ore deposits of the Mocassin Mountains have made Fergus County the banner gold producer of the State. These mines are well worth a visit, both the system of mining and the process of taking out the gold being very interesting. Fergus County produces practically all the precious stones found in the United States. The Yogo sapphire mines are the largest upon the American continent. Altogether it is doubtful if a more desirable place to live or a more profitable place for investment can be found than Fergus County offers.

The returns for taxation show a total value for all property of $9,144,726, of which the largest single item is livestock at $3,096,101 on 623,070 animals. The list shows 11,604 horses at $390,280, including 58 thoroughbred horses at $359.05 each; 61,315 cattle at $1,050,954; 549,103 sheep at $1,649,627; and 1,048 hogs at $5,240.

The land schedule shows 28,117 acres of first class grain land at $337,404, and 58,330 acres second class at $408,310, with 42 acres valued at $50 an acre, 52 acres valued at $25 an acre, and 320 acres at $5; 110,585 acres of railroad land is taxed at one dollar an acre, 659,992 acres of fenced grazing land at two dollars an acre, 880 acres of coal land at $10 an acre, 2,716 acres of mineral land at $5 an acre, and 124,244 acres of Northern Pacific land at $77,673, or about 62 cents on acre. Net proceeds of mines are taxed at $302,983, goods and merchandise at $357,630, farming utensils and wagons at $128,100, machinery at $164,424, and insurance premiums at $35,720.

FLATHEAD COUNTY.

Nearly four-fifths of the total area of Flathead County has been withdrawn from settlement in pursuance of the policy of establishing forest reserves. Protests to the officials resulted in holding up the creation of one which was proposed, but the sentiment is still strong against such wholesale application of the system in one locality. As an example of the deterrent effects of this policy upon the development of the country, the Yakt Basin may be cited. This basin, included in the newly created Kootenai Reserve in the northwest corner of the county, contains about 32,000 acres of good agricultural land with perhaps not to exceed a dozen families in the whole basin. The new law permitting homesteading upon reserves may allow this county to be settled at some time in the future, but that this much-to-be-desired result will be delayed for years is greatly to be regretted.

The Flathead Valley has more the appearance of an eastern farming community than perhaps any other section of Montana. The soil is rich and deep, the climate delightful, and the lake, standing at an altitude of 2,882 feet, with an area of 350 square miles of water, is surrounded by polific farms and orchards with a background of scenic mountains.

Most of the farming is done without water, but having experienced three dry seasons in succession there is now an organized effort to place a large section of the valley under irrigating ditches, the money having been subscribed and the survey completed. Great as the crops have heretofore been, this means an enormous increase in yields of all kinds, with corresponding satisfaction to those benefited.

A pumping plant operated with a gasoline engine was installed in 1906 near Montford to irrigate 700 acres of land, but has not been running long enough to furnish reliable data as to cost of operation or water supplied.

Hundreds of acres of land are being cleared and brought under cultivation every year, there being probably an increase of arable land of two and one-half per cent each season. Land values have increased not less than 25 per cent within 5 years. Timber land which has been cut over by the lumber companies is worth from $10 to $20 an acre according to location; first class dry land is worth from $40 to $60, and irrigated land, of which there is possibly 5,000 acres in the county, from $50 to $100 an acre.

Wheat is the principal grain crop grown, and both spring and winter varieties do well. Of the total crop of 466,680 bushels, the Flathead Valley proper furnished 389,977 bushels. Dayton Creek, 5,849 bushels; Tobacco Plains, 31,882 bushels, and the Indian Reservation 38,972 bushels. Other grains were 345,917 bushels of oats, 32,534 bushels of barley, 6,684 bushels of rye, and 570 bushels of spelz. There is no estimate available of the number of bushels of potatoes grown, but if farmers could get fifty cents a bushel for all they could raise, they would become rich in a few years.

During 1905 prices for wheat ranged from 55 cents to 67 cents a bushel; average 61 cents; oats from $1.00 to $1.25 cwt.; average, $1.12 1-2; barley, brewing, $1.00 to $1.20 cwt.; average, $1.10; barley, bald, from $1.15 to $1.60, and rye from $1.10 to $1.25. The price seems to depend upon the demand rather than upon quality. There is a home market for all grain grown and none is shipped away.

Bald barley is used to fatten hogs which readily bring 8 1-2 cents a pound when finished on this grain. Timothy is the principal hay crop, though there is some clover and brome grass. The crop of all kinds, including wheat, oat and barley hay, in 1905 was 20,000 tons. The latter varieties sold for $12 a ton. A great deal of this is shipped to logging camps. Some flax is grown, but the crop is very limited as there is no market. What has been sown has yielded abundantly. Limited experiments have also been made with hops, but as there are no buyers there is little effort in this direction, although it has been demonstrated that they can be successfully grown. Sugar beets show a prolific yield and analyze 17 per cent sugar in the juice.

To show the productivity of Flathead County soil some specimen yields are given. A. Ingraham raised 1,681 bushels of No. 1 hard spring wheat on 41 acres, an average of 41 bushels an acre, and James Manning had 20 acres that raised 45 bushels an acre of No. 2 winter wheat. John Green raised 4,000 bushels on 100 acres. M. H. Collins of Echo Lake raised 80 bushels of oats an acre, that tested 40 pounds to the bushel. Otto Maidel, two miles

south of Kalispell, raised 41 bushels of barley an acre on 30 acres. G. W. Hyde had 20 acres of bald barley that went 43 bushels an acre and tested 50 pounds to the bushel. Arthur Webster raised 54 bushels an acre of Little Club wheat for feeding. This wheat is high in starch and low in gluten and is not good for milling purposes. On Cayuse Prairie, 14 miles south of Columbia Falls, 50 acres of oats threshed 80 bushels an acre, and the grain weighed 45 pounds to the bushel. This land had been cropped for two years previously and cannot be bought for $50 an acre.

All of these instances are from non-irrigated land and are the result of good farming, summer fallowing and close cultivation. No commercial fertilizer is used. Winter wheat is generally dragged with a light drag three times in the spring.

Flathead County is an ideal spot for orcharding, especially about the shores of the lake. All kinds of fruit are grown in abundance, and some of the older orchards bring a splendid revenue to the owners. There are probably 500,000 fruit trees in the county, and from 50,000 to 60,000 trees are being put out each year. Up to and including 1905 some apples, pears, early cherries and strawberries have been shipped into Kalispell, but there will now be enough apples grown to supply the local demand. One of the finest and oldest orchards is the property of Hon. Fred Whiteside, secretary of the State Board of Horticulture. The fruit inspector for the district is Mr. Fred Hartman, who manages a force of men engaged in spraying the orchards. There are two prosperous nurseries, one at Holt and one at Eureka. Many of the fruit growers are also keeping bees, with splendid results. The Flathead Fair Association is an active body, and three successful fairs have been held under its direction. T. A. Churchill is president, J. M. Parker secretary, and C. K. Dickey assistant secretary.

There are 1,056 square miles of the Flathead Indian Reservation in the county, or 675,840 acres, which is now occupied by 2,100 Indians. The agent is Mr. Samuel Bellew, Arlee, Mont. The Mission farm at St. Ignatius Mission is one of the finest agricultural properties in the State.

Aside from farming one of the greatest industries is lumbering, in which a large number of men are regularly employed, and some of the mills will rank with any in the State.

In connection with the John O'Brien Company mills at Somers, on Flathead Lake, the Great Northern Ry. has established a tie preserving plant which has been in successful operation for a number of years. In 1904, the plant operated from May 1 to Sept. 27, and treated 1,283,938 cubic feet of timber; 417,937 ties were treated, the balance being bridge and other timbers. In 1905 operations were conducted from March 25 to June 18, treating 700,891 cubic feet of timber, including 225,286 ties.

The Wellhouse process was used from the beginning until the spring of 1906, when what is known as the Burnettizing process was substituted. The latter process eliminates the use of glue and tannin, and utilizes only chloride of zinc. The pines are now treated with a 4 per cent solution of chloride; the tamarack, spruce, and fir, being more refractory to treatment, require a 6

per cent solution. For absolute absorption pine requires four hours' treatment under 100 pounds pressure; the other varieties mentioned, anywhere from eight to twenty hours with the 6 per cent solution to get the same amount of zinc which the pine absorbs from the 4 per cent solution. The tamarack is more susceptible than the spruce and fir. Seasoning of all timber for from three to four months is absolutely necessary for effective work. Timber and ties are subjected to three different processes; First, steaming, to loosen the sap and pitch; second, a vacuum treatment to extract all the juices from the wood; and third, the pressure bath in the chloride solution. The time of the vacuum treatment is practically the same for all kinds of timber used, while the time of steaming prior to the other processes is as follows: Non-seasoned pine ties, five to six hours; seasoned pine ties, three to four hours; non-seasoned refractory ties, about seven hours; seasoned refractory ties, never more than five hours.

The following is a tabulated statement of treatment of ties that were seasoned five to six months:

KIND	Weight Before Steaming	Weight After Steaming	Weight After Receiving 4 per cent Solution	Difference in W'g't Between Seasoned Ties and After Receiving Solution
No. 1, Spruce	73	75½	92	19
No. 2, Pine	84	86¼	144½	60½
No. 3, Fir	81¼	83¼	98	16¾
No. 4, Pine	86¾	89¼	173½	86¾
No. 5, Pine	87	89	174	87

The above were steamed 3 hours; vacuum 1 hour; chloride 4 hours.

The following is a statement of treatment of ties that were seasoned five to six months, steamed 4 hours; vacum 1 hour; chloride of zinc pressure 4 hours and 15 minutes:

KIND	Weight Before Steaming	Weight After Steaming	Weight After Receiving 4 per cent Solution	Difference in W'g't Between Seasoned Ties and After Receiving Solution
No. 1, Tamarack	107	108½	142¼	35¼
No. 2, Tamarack	124	125½	160¼	36½
No. 3, Tamarack	98	101	156	58
No. 4, Tamarack	103	105¼	141½	38½
No. 5, Tamarack	92	94½	157¼	65¼
No. 6, Fir	85¼	87¼	103½	18¼

The foregoing clearly demonstrates the necessity for sorting the different kinds of timber.

Triangular ties are regarded as a success, being more uniform as rail-bearers, giving a larger rail surface, easier tamped, and retaining their position better than a pole tie. Another feature is that in taking out a triangular tie, it is usually only necessary to loosen it at the ends, stick in a pick and drag it out. The bearing surface in the ground is generally left so perfect, that a new tie may be slipped into place, the bearing remaining so good that tamping is scarcely necessary, whereas the pole ties must be dug out of the

solid ground, and new ones always require tamping. Again, the triangular ties are always of uniform size, while pole ties are not. The present cant of these ties is 16 by 16 inches, while formerly it was 14 by 10 inches. The superintendent of the plant is Mr. William Henry, Somers, Montana.

An important and very interesting industry now being established is owned by the Kalispell Manufacturing and Improvement Company, whose officers are: C. B. Richards, president; J. W. Schauer, vice-president; George F. Stannard, secretary; J. A. Coram, treasurer. Mr. Schauer is the patentee of an elevator which is used to carry bundles of grain to a threshing machine. It saves all the pitching of bundles, requires only two men to operate, and is estimated to save at least $20 a day in threshing expenses. Patents have been granted in the United States and are pending in Canada. The finished machine will sell for from $150 to $175.

Flathead barley is said to be superior to Gallatin barley, because it is produced by dry farming, thus lessening the precipitation of albumenoids occuring from changes of temperature when beer is shipped. This precipitation causes beer to look muddy, but does not detract from its quality.

There is practically nothing new to report from the Kintla oil fields, no paying wells having yet been brought in. The Southeast Kootenai Land and Oil Company began drilling March 8, 1906, about three miles above Upper Kintla Lake, and are now down 600 feet.

At Oil City, across the Canadian border, there are three producing wells, but all matters connected with them are kept profoundly secret. It is known however, that there is a small experimental refinery there, with three 50 gallon tanks filled with oil, and the wells are plugged.

While nothing definite has been done with the marl deposits described in the last report, experimental diamond drilling has demonstrated the existence of an extensive bed. This is now under bond to a Spokane Company. It is not difficult to foresee the enormous advantage to the county and State which would acrue from the production of Portland cement from these beds, whether undertaken by private parties or by the Government for the use of the Reclamation Service. Cement is coming into use more and more and this resource of Flathead will in time be developed into an enormous industry.

The spirit of association and co-operation is prevalent among the farmers of Flathead, and has manifested itself in various good works. During the spring of 1904 and for several years previously, there was difficulty in finding a satisfactory market for oats. In that year Mr. McC. Winiger wrote to Seattle and Duluth for prices on oats and sent samples of Flathead grain. Offers varied from $1.05 to $1.12 per cwt, as against 80 cents in the home market. The first shipments made were for seed, but later 32 carloads were sent to oatmeal factories.

As this method of marketing was extended, the necessity of having some rapid means of communication among the growers was felt, and from this necessity the Farmers' Telephone Company was developed, and construction begun in July, 1904. Each farmer took $40 worth of stock in the main lines,

paid for his own telephone and for connections with the main line, making a total investment of $65. The instruments cost $25 each, and were supplied by the Chicago Telephone Supply Company, whose factory is at Elkhart, Indiana. The territory covered is about 30 miles long by 18 miles wide, and from two to six wires are strung on each pole, making about 350 lineal miles of wire. One hundred and thirty-five phones are now in use. The main lines were originally built by Mr. McC. Winiger, at a cost of $15,000, and this has gradually been paid back by the company until less than $7,000 remains to be paid. Rates for each phone at the beginning were 80 cents a month, but this is now down to 70 cents, and will be cut to 50 cents when all the farmers are in and the outstanding indebtedness is paid.

The Farmers' Mercantile Company, a co-operative institution, was incorporated in July, 1904, with a capital of $50,000, of which $15,000 was paid in. Shares are of the par value of $100 each. The business of the Leiter & Bruce Hardware Company was purchased with the paid-up capital, and Mr. Leiter made manager. The stock now inventories $26,000, and is housed in a new brick building 50 by 120 feet, two stories high. The upper floor is occupied by the Farmer's Board of Trade, and waiting and toilet rooms for the farmers wives and children. Telephone service is also supplied so that the people waiting can always have communication with their homes. It is proposed to double the capacity of this building in 1907. The business of the company is prospering and the demand is for the highest quality of goods. The stockholders comprise the principal farmers of the valley. McC. Winiger is president, Christ Prestbye, vice-president, and J. A. Leiter, secretary and manager.

The Farmer's Board of Trade has become a great factor in the community and has proven of great benefit in keeping the farmers posted by means of the telephone on market prices and crop conditions. M. T. Small is president, J. V. Harrington and F. H. Phipps, first and second vice-presidents respectively, and McC. Winiger, secretary.

The population of Flathead has increased by 3,000 in the last two years, and is now 17,000. The principal towns are Kalispell, Columbia Falls, Whitefish and Somers. The first named has two banks, and the others one each. School and church facilities are exceptionally good.

In Kalispell there is a beautiful Carnegie Library building which cost $12,000. It is open from 2 p. m. to 10 p. m., and the city contributes $1,000 yearly for its support. Kalispell has three newspapers, and three others are published in the county. The mineral resources are gold, silver, lead, zinc, copper, asbestos, marl, lime, and coal.

The assessed valuations are shown in the statistical tables.

GALLATIN COUNTY.

Gallatin County, comprising a total area of 1,663,000 acres, is an irregular-shaped tract occupying the south-central part of the State. The southern portion of the county is mountainous and extends to the boundary of Idaho and the Yellowstone National Park; the land to the north is less elevated,

R, 18 MILES FROM HELENA.

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CONSTRUCTION VIEW OF THE HELENA POWER TRANSMISSION CO'S. NEW DAM ON THE MISSOURI RIVER, 18 MILES FROM HELENA.

and affords fairly good range, while the middle portion of the county contains the rich alluvial plain, known as the Gallatin Valley. This valley is 28 miles long and about 14 miles wide. It is here that agriculture has reached its highest development in Montana. There are not far from 225,000 acres under cultivation in the county, of which more than one-half is farmed without water.

Vast crops of wheat, oats, barley and rye are raised; no barley is grown without water, while wheat and rye are the favorite dry land crops. Irrigated farms yield 30 to 50 bushels of wheat, 35 to 70 bushels of barley, and 60 to 130 bushels of oats to an acre. Non-irrigated farms will average in wheat 25 to 30 bushels, and instances are plentiful where 50 to 60 bushels have been grown under favorable circumstances. Irrigated alfalfa yields five to six tons an acre in two cuttings, and clover the same, while an average crop of timothy is three tons; fallowing has been practically abandoned. It is now the practice to rotate grain and clover for two years each. A little flax is raised, but not enough to make a market. In fact, all the cereals are grown to perfection, and enormous crops are the rule

In competition at the National Irrigation Congress at Ogden, Utah, in 1903, Montana barley, grown by the Manhattan Malting Company, was awarded first prize—a $500 loving cup. This grain is in demand the world over—where quality is required. In January, 1906, 16 carloads were shipped to Australia, via Vancouver, B. C., to be used in making English ale, and a few weeks earlier several carloads of malt were sent to Japan, where an attempt will be made to manufacture lager beer.

The areas of private land as returned for assessment in 1906 are: Grain land, first class, 46,656 acres; second class, 59,152 acres. Hay land, first class, 11,600 acres; second class, 11,618 acres. Grazing land, fenced, 132,754 acres; unfenced, 390,199 acres. Railroad lands, 72,218 acres. A valuation of $3,565,89 is placed upon this total of 724,197 acres, and comparison with the roll of 1902 shows an increase in taxable area of 176,051 acres in four years. Also that there are 938,803 acres of unproductive and unoccupied land, which, of course, includes the mountain ranges.

Land values have increased 100 per cent in the past five years, and fully one-half of this gain has been made in 1905 and 1906. Cultivated farms with water right, will sell anywhere from $25 to $75 an acre, though some tracts are held at a much higher figure. In 1906, 50 acres near Bozeman were sold at $300 an acre.

Cultivated farms without water are valued at $15 to $25 an acre. Tenant farmers are, perhaps, ten per cent of the whole number.

The grain crop furnishes work for 100 threshing machines and the charge for threshing wheat is six cents, and for oats five cents. At these prices the threshers furnish everything, including food for the crew.

The total valuation of livestock is $901,310, divided in number and value as follows: 10,064 horses, of which 61 are thoroughbreds at $279.80 each; 32,478 cattle, at $488,030; 28,852 sheep, at $86,735; and 1,300 hogs, at $6,490.

Mortgages amount to $80,560, and the total valuation of real estate and improvements is $6,406,980.

The principal city and county seat is Bozeman, called the 'Beautiful," a thriving city whose future is assured by reason of the rich agricultural region which surrounds it. The Montana College of Agriculture and Mechanic Arts, and the Experiment Station are located at Bozeman, and the locality owes much of its present high development to the active and painstaking efforts of those in charge of these institutions.

The little town of Belgrade is the largest grain shipping point in the State, while Manhattan is a close second. The latter town also has the only malt house in the State, outside those operated in connection with breweries, in which vast quantities of malt are made from the famous Gallatin Valley barley.

An active campaign for the establishment of a beet sugar factory has been carried on during the past year, and it was confidently expected that the coming season would witness the construction of a plant of equal capacity to the Billings factory. Contracts were secured for many acres of beets, and perhaps one hundred acres were grown during 1906, the beets being sent to Billings. Failure to secure the requisite field labor for next season's work has retarded active building operations, but there has been no abandonment of the efforts to secure the establishment of the factory, which is regarded as certain. The necessary acreage has been subscribed, capital is secured, and the only drawback is found in the condition of the labor market. The committee in charge is still engaged in trying to solve this problem either by making contracts with firms which supply this class of labor, or by promoting immigration. The people of the whole county are an enthusiastic unit for the establishment of this industry, and will eventually work out some plan which will reward their efforts in this direction. It is doubtful if the advantages of this section for the successful cultivation of sugar beets is exceeded by any other locality now engaged in such culture.

The chief manufacturing industry of Gallatin county is the Manhattan Paper Mill, which has been in successful operation since 1904, although the buildings were erected in 1899. Under the present management, the plant has been operated continuously during 1906, and now supplies fully one-half of all the print paper used in the State, as well as a large part of the wrapping paper. In addition to the new machinery installed in 1904, when a complete change was made from straw to wood pulp, more than $25,000 has been expended for this purpose and in improvements during the past year. The mill is now in first-class condition, is manufacturing four and one-half tons of paper daily, and employs 18 men.

GRANITE COUNTY.

This county presents an anomaly among Montana counties in that it has no bonded debt. The outstanding warrant indebtedness is $19,500 and the total tax levy for 1905 was $76,383.32. There has possibly been a slight decrease in population since July, 1905. The general occupations are mining, stockraising and farming. Agricultural development is not so marked as in

other portions of the State, owing to the elevation and broken condition of a large portion of the county. However, there are two large valleys containing some fine agricultural land, Flint Creek from Drummond to Philipsburg, 36 miles long by two and one-half miles wide, and Rock Creek 30 miles long by one and one-half miles wide.

The upper end of both valleys is devoted principally to raising hay, but wheat, oats, rye and potatoes are good crops lower down. There is some timothy and clover but most of the hay is from native grasses. No alfalfa is grown. Rye hay is grown on the dry farms, and has been known to cut as much as three tons an acre, though the average yield will not exceed one and one-half tons. Some hay and grain is shipped out of the county, 40 cars of the former having been loaded at Drummond, while six cars of wheat and four cars of oats were sent to Butte and Bonner in 1905.

In the Philipsburg district, silver is the principal mineral product, and the great industry of the county is the Bimetallic mill at that place.

One hundred and twenty-five men are working on leases, and 35 directly for the company, developing and prospecting. The Hope mine, now the property of the Good Hope Mining Company, is probably the oldest producing mine in the State, and is said to have more ore in sight at the present time than ever in its history. This is certainly a wonderful property. The mill, just in the edge of the town, is very old, and the engine, still in commission, is claimed to be the first ever brought into the State.

Other mining districts are Garnet, Flint Creek and Red Lyon. The Mussigbrod properties have been large producers of gold during the past year at Garnet, also the Grant and Hartford, and the Nancy Hanks. The population of the town was increased by 200 during the past 12 months. The town of Red Lyon, 12 miles southeast of Philipsburg, has a population of 75, and is the scene of operations of the Milwaukee Gold Extraction Company, which begun production in 1905.

Granite county has no extensive manufacturing industries. There is a $20,000 brewery, a harness factory representing an investment of $8,000, and a cigar factory at Philipsburg. Hall has a new creamery, the product of which "May Blossom" commands a premium on the market. The investment is $4,650. About 500 tons of coal were produced near Drummond in 1905 from a new property, and the sawmills cut 800,000 feet of lumber the same year. There is no county fair. The poor of the county are provided for under contract and of the $6,112.42 collected as poor fund for the year 1905, there remained a balance of $5,236.43 at the close of the year.

Under the new law, Granite is now a county of the eighth class.

Granite shows a small decrease in assessed valuation as compared with 1905, when the total was $2,257,828. In 1906 the figures are $78,935 less or $2,178,893. Mortgages amount to $34,508, and real estate and improvements amount to $1,021,377. Aside from 62,225 acres of railroad land valued at $51,429, there are 100,628 acres assessed for a total of $275,131. Segregated by character, area, and value there are: Grain land, first class, 1,280 acres, at $14,080; second class, 2,260 acres, at $20,340; hay land, first class, 1,565 acres,

at $17,215; second class, 10,200 acres, at $92,160; grazing land, fenced, 41,500 acres, at $72,625; unfenced, 31,560 acres, at $1 an acre; land with saw timber, 2,875 acres, at $16,771; and 10,380 acres of other timber, at $1 an acre.

There are 150 ditches in the county, those used for irrigating aggregating 70 miles, and those for mining 23 miles. All are valued at $18,744, or $201.54 a mile. The livestock valuation is $298,995, divided as follows: Horses, 3,149, of which 25 are thoroughbreds, at $222 each, value $73,765; cattle, 18,826, value, $202,305; sheep, 5,723, value, $17,170; hogs, 135, value, $675; and 1,270 angora goats at $5,080. Insurance premiums are taxed at $3,192, water and light companies at $600, farming utensils and wagons, $31,690, and machinery, $88,010. Eight hundred mining claims are valued at $52,929.

JEFFERSON COUNTY.

The population of Jefferson county has increased by 300 in the last two years, and is now 6,000, the greatest increase of town population being in Basin. Principal towns and their population are: Boulder, 700; Basin, 700; Whitehall, 600; Clancy, 300; Elkhorn, 100.

Mining and stockraising are the chief industries, agriculture being but little developed, perhaps not to exceed 10,000 bushels of grain being produced, which is not nearly enough to supply the home demand. Other products are alfalfa, which yields from three and one-half, to four tons in two cuttings; timothy and some upland wild hay. The latter will yield one and one-half tons an acre, one cutting only. Wheat yields from 30 to 40 bushels, and oats from 40 to 70 bushels an acre. There are two threshing outfits in the county.

Tenant farmers are less than three per cent. There is no library, no county fair, and no farmers' organizations.

The price of cultivated land, with water, will average about $25 an acre. No dry farming is done. Apples and small fruits in the south end of the county grow very successfully in the few orchards that have been planted. July 1, 1906, witnessed the completion of a ditch 16 miles long, 10 feet wide at bottom, which will cover 3,000 acres of land near Whitehall, at a cost of $35,000, the property of the Jefferson Canal Company. Water is taken from the old Fish Creek canal. It is estimated that cost of maintenance will not exceed 15 cents an acre a year.

While there is no development of water power, it is believed that a limited amount of power could be secured from the North Boulder, and one or two other small streams.

There is a brewery and cigar factory at Basin, and a creamery and cigar factory at Whitehall. The Heinze concentrator, the principal industry at Basin, was closed July 20, 1906.

About eight miles of roadbed of the Montana-Northern railroad which was to connect Basin with the Northern Pacific at Elliston, was graded in 1904, but since then nothing has been a done. A $60,000 smelter and a $15,000 concentrator were constructed and successfully operated in the Cataract district in 1904.

The Square Deal Gold Mining Company, of which Henry Brasnault of Kansas City, is president, put a dredge on the Jefferson River about two miles east of Lime Spur on March 1, 1906. The dredge was to work the placer gold deposits, and cost some $50,000. The same company installed a similar dredge on Basin Creek about eight miles northwest of Basin, at the same time, which cost $25,000. Both have been in continuous operation since.

A new industry is the Boulder Lime Company, which has 160 acres of 98 1-2 per cent of pure lime rock about twelve miles east from the city of Boulder. Besides engaging in the production of lime, the company will manufacture sand lime, pressed brick and sand lime blocks. These are manufactured of common sand, hydraulic lime, and aluminum clay. This is pressed into brick form and hardened under heavy steam pressure.

The process is not a new one except as to hardening under steam pressure. They have been made in a small way for many years and hardened by exposure to the atmosphere, but the present method, by which the finished brick may be turned out in a few hours in a commercial way in large quantities, is a strictly modern development.

Several systems have been in use in Germany for ten or twelve years, and fifty-three plants have been established in this country within the last three or four years, all of which are working successfully.

Special mechinery has been designed for this purpose, that is continuous and automatic in its operation, so that the materials are not handled after they are fed to the first machine until the perfectly formed brick are taken from the press.

In the modern method, various automatic mixing, grinding, measuring and conveying machines are used for preparing the material. This carefully prepared material is fed automatically into a heavy, specially constructed press, which forms the brick under extreme pressure and delivers them in front of the machine. They are then picked off by hand and placed on specially constructed steel cars; this is the only handling they receive during the entire process.

These rotary-bearing cars, with a capacity of 900 to 1,000 brick each, after being loaded, are sent to the hardening cylinder.

The hardening cylinder is a massive steel drum, six or seven feet in diameter, containing a track on which the cars are run, and is large enough to hold a day's run (2,000 brick per hour). When filled the cylinder is closed and sealed and a steam pressure of about 125 pounds to the square inch is turned on and held for eight or ten hours.

Under the heat, moisture and steam pressure, a chemical combination takes place forming calcium silicate, and hardening the brick into stone, in fact, forming an artificial sand stone, which is harder than natural stone and is not subject to decay from the action of the atmosphere but continues to grow harder with age.

The cylinder is opened at the end of the hardening process, and the cars loaded with finished brick, are pulled out by a special car puller, which takes them out all at once and also handles the heavy steel head of the cylinder.

The brick are now ready to go into the wall or piled up in stock sheds.

Experiments have proved that this type of brick will stand a crushing strain of 2,500 to 7,000 pounds per square inch immediately after being made, and, of course, increasing as they acquire age. Engineers and architects consider ordinarily that a 2,000 pound resistance constitutes a sufficient element of safety. Less than half the moisture is absorbed by the lime brick than the ordinary kind.

The Montana Portland Cement Co., with headquarters at Bozeman, has been formed to exploit a sixty-acre deposit of clay shale near Whitehall in the manufacture of Portland cement. This deposit is near the track of the N. P. railway, and is said to contain sufficient material to produce 100,000,000 barrels of the finished product.

The returns show that Jefferson County assesses a total of 218,541 acres of land at $504,840. Of this amount 94,794 acres are railroad land at $80,583. The 3,850 mining claims are listed at $199,119. No classification is made of farming lands.

The total valuation of the county is $4,924,405, of which the greatest single item is the assessment on railroads, aside from their land holdings, amounting to $1,852,073. Mortgages amount to $66,456, while the total valuation placed on real estate and improvements is $1,619,637.

The whole number of animals in the county is 29,051 with a valuation of $343,978. This includes 3,182 horses at $85,818, with 12 thoroughbreds at $179 each; 14,337 cattle at $223,023; 10,900 sheep at $32,705; 177 hogs at $1,092, and 455 Angora goats at $1,340. Mining and irrigation ditches are assessed at $61,373; net proceeds of mines, $65,000; insurance premiums, $15,506; bank stock $72,000; machinery, $437,205; light, water and express companies at $129,000; farming utensils and wagons at $47,842.

There are 293 miles of telegraph and 560 miles of telephone lines assessed at $18,775.

LEWIS AND CLARK COUNTY.

Vastly more attention has been given to the industrial and mineral development of Lewis and Clark County than to agricultural interests. The most important area of arable land is undoubtedly the Prickly Pear Valley in the vicinity of Helena, but this large tract produces principally wild hay, chiefly owing to lack of water. A government project to irrigate the valley by bringing in a supply from the Madison River is held in abeyance for the reason that the cost of such an undertaking is believed to be prohibitive. However, a sub-project of the dam company at Hauser Lake, contemplates the reclamation of about 25,000 acres of this valuable land, which will aid materially in the advancement of the agricultural interests of the county.

In the northern section there has been considerable development between Craig and Augusta, but future movement in this direction depends upon the completion of the Sun River irrigation project by the Government.

Some 50,000 acres of choice lands are now under double withdrawal from settlement and no locations can be made. The land at Dearborn selected un-

der the Carey Act for State reclamation is now in litigation, and will undoubtedly be turned back to the public domain.

The crying need of the county is water for irrigation and, owing to the valuable nature of the land involved, together with the increasing demand for productive farms, some plan is sure to be developed in the near future for supplying it. The mineral resources have attracted more attention during recent years, and a number of properties thought to be worked out have again become producers under a system of deep mining. This is especially true of the Whitlach-Union mine, the Jay Gould, and others.

The porphyry dike at Rimini, long known as a vast deposit of low grade ore, will soon be the scene of active operations on an enormous scale, giving employment to many men and adding materially to the metal output of the county. Other districts have felt the impetus of new life and capital and the outlook has not been so favorable for years.

By reason of favorable shipping facilities, Helena has long been regarded as a choice location for manufacturing, and the city contains a large number of successful and rapidly growing enterprises of this character.

One of the chief attractions of the city is the famous Broadwater Hotel and plunge bath, the latter the largest enclosed swimming pool in the world. This property is now being made ready for occupancy and will undoubtedly become a favorite resort for thousands of people, who will thus have an opportunity to familiarize themselves with the resources and possibilities of Montana. As the capital of the State and the county seat, Helena has many fine public buildings and occupies an important position among the cities of the commonwealth.

Many of the prominent stockmen make Helena their headquarters, and a considerable percentage of the cash returns from the sale of cattle, sheep and wool finds its way into the commercial activities of the city.

Church privileges and school facilities are not excelled by any other community in the State, the latter including a well supported denominational college.

The Masonic fraternity recently decided upon Helena as the location of a Masonic Home, purchased a farm in the valley, and construction work upon the buildings is now under way.

Helena is also the permanent place of holding the State Fair, which attracts thousands of visitors yearly. The grounds are conveniently located and contain many large and valuable bulldings, while the exhibits in all classes are simply marvelous.

Lewis and Clark County is one of the two second class counties in the State, having a total valuation of $17,686,070. Mortgages are assessed at $194,275, and real estate and improvements at $11,107,370.

Land values are classified as follows: Grain land, first class, 29,315 acres, $458,360, about $15.50 an acre; second class, 34,530 acres, $357,450, nearly $11 an acre; hay land, first class, 42,842 acres, $302,575, a little more than $9 an acre; second class, 48,760 acres, $199,715, or about $4 an acre; grazing land, fenced, 75,490 acres at $97,435; unfenced, 163,612 acres at $152,785;

timber land, 3,875 acres at $45,480; and 76,262 acres of railroad land at $102,295, or about $1.35 an acre. There are 20,320 mining claims assessed at $69,670; 829 miles of telegraph and 565 miles of telephone lines valued at $47,225. Franchises of the latter company, together with those of electric, gas, water, express and street car companies are taxed at $365,000, and their property at $398,430; net proceeds of mines at $54,510; insurance premiums at $109,620; bank stock at $775,490; lumber and wood, $104,075; machinery, $94,825; goods and merchandise, $948,595; and farming utensils and wagons at $101,825. The livestock valuation is $913,655, levied on 131,387 head. Horses, including 53 thoroughbreds at $117.45 each, number 6,209, valued at $162,870; cattle 27,214, at $455,560; sheep 96,445, at $290,065; hogs 355, at $1,785; and 1,055 Angora goats at $3,375.

MADISON COUNTY.

The general altitude of this county militates somewhat against high agricultural development, although there are many fine farms and splendid crops are raised. Irrigation is uniformly practiced no dry farming of any consequence being done. The products are wheat, oats, barley, rye (principally for hay), alfalfa, timothy and clover, with all the root crops. The county produces more than it consumes and large quantities of hay, potatoes and other products are shipped to Butte. Six threshing machines are owned and find steady employment during the season.

The farmers are entirely without organization, and about one fourth are tenants, probably as large a percentage as in any county in the State.

In the cultivated sections the land is highly productive, as specimen yields will show. On Bear Creek in the Madison Valley it is common to raise 75 bushels of wheat to an acre, while the average crop is estimated to be about 60 bushels. The average yield of oats in the Ruby Valley is 50 bushels an acre; wheat from 30 to 40 bushels; alfalfa 5 tons in two cuttings. Mr. Clapp, of Laurin, in 1905 raised 1,100 bushels of oats on 10 acres. Sixty-one acres of alfalfa yielded 235 tons the first cutting. Clover cuts as much as 3 tons, and timothy 2 1-2 tons with one cutting. Alfalfa generally sells for $5 a ton in the stack, timothy and blue joint $8, and upland wild hay $5.

Land values in Madison show a wide range and there is probably no locality where really good land can be bought so cheap, though prices are being steadily advanced. Cultivated land with water, that five years ago would hardly bring more than $10, is now not less than $15 on an average, and some is held as high as $30 an acre. Near Waterloo, not because the land is better but from the fact that this is an older community and nearest to market, land will average from $20 to $25 an acre. On the outskirts of Sheridan 40 acres were sold for $4,000.

The agricultural areas of the county are the Ruby Valley, 30 miles long and averaging 2 miles wide; along the Beaverhead River from Twin Bridges to Sheridan there is a tract 20 miles long by 8 miles wide; the Madison Valley from Upper Madison to Meadow Creek 50 miles long by 9 miles wide; the Waterloo country, in the Jefferson Valley, 10 miles long by 5 miles wide; the

FREIGHTERS ON THE TRAIL.

Jefferson Island country, 10 miles long by 8 miles wide; from Pony and Harrison to Norris, about 15 miles square; the Cherry Creek Basin, about 8 miles square; the Centennial Valley, about 50 miles long in Madison County, by 7 miles wide; and the Black Tail country, about 10 by 5 miles. The three latter districts raise only hay, with the exception of the Black Tail, where oats are grown.

There is no rural free delivery of mail, no pumping plants, no creamery, and no land withdrawn for Government irrigation projects.

Such fruit as has been planted does magnificently, and apples, cherries, raspberries and strawberries are grown in quantities.

The only new irrigation enterprise in the county is the J. B. Wellcome ditch, begun in 1905, to cover 4,000 acres of land. This ditch is 14 feet at the top, 10 feet wide at bottom, carries 3 feet of water, and will cost $15,000. The leading towns in the county are Virginia City, Sheridan, Twin Bridges, Pony, Norris, Ruby, Laurin, and Silver Star. Virginia City, altitude 5,600 feet, is the county seat, and was the scene of great excitement over placer mining in early days. At one time it was the location of the State capital.

Manufactures are not extensive. Silver Spring Flour Mill, owned by Hon. Archie Hyndman, represents an investment of some $8,000. This is an old mill buildings and was idle for some time, but has been running on part time for four years. In 1905 it was operated for seven months.

The flour mill at Harrison, owned by Mr. S. B. Wright, was remodeled in 1905, and represents an investment of probably $4,000. It has a capacity of 50 barrels a day and was run four months in 1905. The output of both these mills could be greatly increased if enough wheat was grown in the county to keep them in full operation.

Virginia City has a $10,000 brewery doing a profitable local trade, and an old brewery at Twin Bridges has been remodelled at an expense of $30,000 in 1906.

Twin Bridges hold a county fair, to which the commissioners appropriate investment of $1,000 in the plant, 350,000 common brick were made, all of which were used at the State Orphans' Home.

Five sawmills cut in the aggregate 800,000 to 900,000 feet of lumber a year. The number of men employed is 15, and investment about $4,000.

There are five banks, four newspapers, and a public library.

Twin Bridges holds a county fair, to which the commissioners appropriate $1,000 yearly. The officers of the Fair Association are: P. Carney, Waterloo, president; L. A. Thompson, secretary, and A. J. Wilcomb, treasurer.

The county is well supplied with telephone service, there being, aside from the Rocky Mountain Bell Company, two local companies. One operates a line from Virginia City to Ennis, 14 miles, and from the latter place serves more than two-thirds of the ranchers in the Madison Valley. From Twin Bridges another company supplies nearly every rancher in the Beaverhead Valley.

Part of the immense water power of the Madison River is being utilized by the Madison River Power Company. The dam is located 7 1-2 miles

southeast of Norris on the Lower Madison River 1 1-2 miles below the head of the canon. This originally was but a temporary structure built by L. L. Nunn & Co. in 1898, who incorporated what was called "The Power Company," which company sold power over its lines to the Butte Electric Power Co. In January, 1905, the Madison River Power Co. succeeded in ownership, and where the dam was originally constructed only part way across the river the new company has completed the stretch entirely across and raised it to 57 feet in height from the deepest portion of the river. It is 236 feet across with a spillway 140 feet long by 10 feet deep, closed by flashboards during other times than extreme high water. Also has additional spillway through a pipe 11 feet in diameter through concrete end of dam which discharges under head 26 feet on the center.

The intake to feed the line starts with a steel tubular pipe 14 feet in diameter soon tapering to a 10-foot wooden pipe which is 7,750 feet long. A new power house 65x200 feet is located at the lower end of this pipe which is equipped with the latest electrical appliances that is guaranteed to 80,000 voltage. Sixty thousand will be used in actual practice. It is a 12,000 horsepower plant which is equal to about 10,000 kilowatts.

Power is now transmitted to Butte and Bozeman, a pole line is being erected to Ruby for use of the immense dredges and will soon be used at the Greene-Campbell mine near Whitehall in Jefferson County, and a little later in the city of Belgrade in the Gallatin Valley.

There is a double pole line to Butte and an independent phone line. A single phone line to Bozeman.

At the Butte station connection is made in such a way as to enable power to be taken from the Big Hole plant and sent to Bozeman.

Mortgages in Madison County are taxed to the amount of $199,692, upon property valued at $430,000. while the total value of real estate and improvements is $2,492,020. A total of 472,672 acres of land is assessed at $1,122,686, including 57,427 acres in possession of the railroad at $30,400, nearly 53 cents an acre. Acreage of the remaining lands is not given, but the classification and values are: Grain land, first class, $104,585; second class, $165,565; hay land, first class, $138,555; second class, $393,423; grazing land, fenced, $190,327. Mining claims are taxed at $68,423; bonds, $27,025; bank stock, $174,615; insurance premiums, $22,662; net proceeds of mines, $13,500; machinery, $101,120; bank deposits and money on hand, $300,439.

Two hundred and twenty-seven miles of telegraph lines are taxed at $6,920 and 205 miles of telephone lines at $16,700, while irrigating ditches are down at $40,000.

The livestock assessment remains about the same as for 1905, being $1,159,663, against $1,162,764 for that year. The whole number of animals listed is 129,820, with the following classification and values: Horses, 10,852 at $350,525, which includes 56 thoroughbreds at an average of $289.73 each; cattle, 36,778 at $557,373; sheep, 80,079 at $242,020; hogs, 973 at $5,960; and 1,183 Angora goats at $3,776.

MEAGHER COUNTY.

This county is, in the main, devoted to stock raising, with great tracts of land owned or controlled by individuals and companies engaged in this business. Agricultural development is consequently limited, and will doubtless so continue so long as present conditions obtain. So far as can be learned there is no prevalent disposition to inaugurate any change from livestock raising to general farming. Soil and climatic conditions would make irrigation necessary, and this could only be undertaken by a large company or under the Government Reclamation Service. The latter has had under consideration a project which would bring water to a considerable acreage, but this is being held in abeyance. There has been no material increase in population since 1900.

The mineral resources include vast iron deposits, with claims from which ore has been taken. It is understood that most of this property was included in the recent sale of the Great Northern railroad's iron land holdings to the United States Steel Company.

White Sulphur Springs, the county seat, is the location of famous medicinal springs, from which water is now being bottled and shipped. It is a pleasant little city of perhaps 500 inhabitants.

No clearer illustration of the supremacy of the livestock industry in this county can be given than the figures showing the assessment of lands. Of a total of 735,679 acres on the roll, 362,400 acres are unfenced grazing land valued at $376,079; 146,073 acres are fenced grazing land at $259,342; 45,000 acres are first and second class hay land at $385,000; while but 1,200 acres at $10 an acre is returned as first class grain land, and 1,000 acres at $6 an acre as second class grain land.

The railroad holdings in this county comprise 179,505 acres, listed at $152,560, about 85 cents an acre.

There are 4,865 horses valued at $132,560, including 13 thoroughbreds at an average of $415.38 each; 34,197 cattle at $512,196, ranging in value from $9 to $40; 238,260 sheep at $714,780 or $3 each; 231 hogs and 3 Angora goats at $1,167. The total value of livestock is $1,360,703, and the number of animals 277,556.

Mortgages are taxed at $36,389; bank stock, $110,000; insurance premiums, $12,482; machinery, $18,745; farming utensils and wagons, $44,793; goods and merchandise, $112,398. Two hundred and twelve miles of telephone lines are assessed at $6,500. No telegraph lines are reported.

MISSOULA COUNTY.

The present population of this county is about 22,000, the gain during the past two years having fully made up the loss occasioned by the segregation of Sanders County. Remarkable activity and development is noticeable in every branch of industry, though there is not nor has there been since 1890 anything in the nature of a boom. The elevation of the valley, 3,200 feet, and the location, the western slope of the continental divide, together with a fruitful soil and vast natural resources, combine to make this section

of the State attractive to settlers, conducive to business prosperity, and certain of great future progress and development. The certainty of acquiring a new transcontinental line of railroad, in addition to the already enormous business of this character now enjoyed, and the construction of a dam in the river by which thousands of acres of land immediately tributary to Missoula now wholly unproductive, will soon be ready for cultivation, have established a degree of confidence in all classes of people in that city, which now boasts a population of 10,000.

Thousands of pieces of literature descriptive of the Flathead Reservation have been sent out from Missoula, thus attracting the attention of prospective settlers, many of whom have already made the trip to the reservation and decided to locate on other land, or to engage in some other occupation until the time of opening.

The market for lumber occasioned by the demand from that section of the country formerly supplied by the mills in Minnesota and Wisconsin, where the cut is said to have dropped off 1,000,000,000 feet in two years, has never been equaled in the history of the mills. The industry furnishes employment for many men, and represents a large investment of capital. Other manufactures are flour, beer, sash, doors and interior finishings, cider and vinegar, brick, cement blocks, foundry products, and cigars.

Missoula is the county seat and principal city, other places and their population being: Bonner, 500; Lothrop, 300; Frenchtown, 300; Superior, Iron Mountain and Saltese, 200 each; Amador and De Borgia, 150 each; Bonita and Clinton, 100 each.

Few cities in the State possess more natural attractions than Missoula, and these have been added to by parking and grading streets, cement walks, planting shade and fruit trees, which, with the many magnificent residences, make a most delightful place of residence. Much of the progress in this direction dates from the location of the State University at this point, which institution is enjoying well merited growth and success. The city has a $26,000 Carnegie library, two daily papers and three banks.

An enterprise of great moment to this city and the county as well is the construction of a 28 foot dam across the Missoula River, just below the mouth of the Big Blackfoot River at Bonner. At this height it will be possible to carry water to the land south and west of Missoula, as far as Frenchtown, furnishing irrigation facilities to 100,000 acres and perhaps more. This undertaking has been talked of for many years, and that it is now about to be consummated is a matter for congratulation. The land in question has no superior in the Northwest, and with water will be transformed into veritable gardens. The power from the dam will be used to operate the electric light plant for Missoula and a street railway system, which will soon be constructed. The plans also contemplate an electric road through the Bitter Root Valley, though this will probably not be built for some time.

In the western part of the county the Amador Mining Company completed 12 miles of railroad in 1905 to facilitate the operation of their mine, while the

Big Blackfoot Milling Company has had a logging road in commission for a number of years.

The Western Milling Company produces about 16,000 barrels of flour a year, sold mostly throughout Montana and Northern Idaho. The mill, which uses electric power, ran continuously during 1905 with the exception of a short shutdown for repairs. The original investment in this plant, which includes a commodious modern elevator, was $30,000, but during 1905 this was increased by $10,000. About $4,000 a year is expended for labor. This company also has a planing mill department representing an investment of some $18,000, with a yearly output of about $35,000.

Owing to failure to utilize the natural water supply for purposes of irrigation, there is much unproductive land in Missoula County, and most of the grain and hay is raised without water. Wheat on these lands averages 25 bushels an acre, and oats 40 bushels; with water these grains yield 45 and 60 bushels an acre respectively.

Irrigated grain and hay land is worth generally from $50 to $75 an acre. Some farms are worth $100 an acre, while garden and fruit tracts in small areas are worth as much as $500 an acre. Unirrigated lands range from $10 to $35 an acre.

The Grass Valley-Frenchtown Irrigation Company, a co-operative concern composed of the farmers whose land is adjacent to the canal, began work in 1902 on a project to take water from the Missoula River at a point about four miles west of the City of Missoula, but on account of litigation was interrupted for a year. The ditch, which is 10 miles long, cost $18,000, covers 16,000 acres of land, was completed in 1905.

Horticulture is highly developed, and the magnificent orchards of apples, cherries, plums and peaches are a source of great profit. All small fruits and garden truck are grown to perfection, together with corn and melons.

The Rattlesnake Valley north from Missoula is a succession of orchards and gardens for miles, and the strawberries from this section have a wide reputation for size and flavor. Growing vegetables for Butte and Anaconda markets is a favorite occupation which promises to be largely extended.

In addition to farming, horticulture and lumbering, there is considerable placer and quartz mining, the mineral resources consisting of gold, silver, lead and copper. Clinton is the oldest organized mining district in the State. Notwithstanding the comparatively advance ddevelopment of this county, there are still many opportunities for settlement and investment, and land values are certain to advance. The opening of the Flathead Indian Reservation will bring many people, and a large number of these will eventually be added to the permanent population, both in the town and country districts.

A very general idea of the agricultural development of Missoula may be gained from the returns of the assessor upon the various classes of land. By these figures it is shown that there are 7,933 acres of first class grain land worth $245,135, an average of about $30 an acre; 17,248 acres of second class grain land worth $190,329; hay land, first class, 3,676 acres worth $75,291; second class, 5,792 acres, worth $59,206; grazing land, fenced, 46,523 acres worth

$117,213; unfenced, 55,546 acres worth $114,044; timber land suitable for saw logs, 48,547 acres worth $292,686; other timber land, 507,842 acres worth $1,052,887, making a total including mining claims of 693,107 acres at a valuation of $2,146,791. To this must be added 145,416 acres of railroad land taxed at $223,795, an average of about $1.50 an acre. The property of express, water and light companies is assessed at $192,476, and their franchises at $35,000; machinery $102,955; net proceeds of mines, $6,500; insurance premiums, $48,430; bank stock, $312,447; solvent credits and money on hand, $14,139; mortgages affecting $479,184 worth of property at $239,592. The total value of real estate and improvements is $5,119,238, and of all property is $10,322,799.

Thirteen miles of irrigating ditches are taxed at $1,385. Livestock numbers 19,374 head worth $288,705. The list includes 4,058 horses, 9,642 cattle, 4,616 sheep, 894 hogs and 164 Angora goats.

Aside from the valuation of $2,516,816 placed by the State Board of Equalization upon Northern Pacific railroad property, there is an item of $40,000 on the Big Blackfoot Milling Company's logging railroad, and another of $41,176 on that of the Amador Mining Company; 1,270 miles of telegraph line are taxed at $31,948, and 519 miles of telephone line at $37,574, including the franchise at $6,000.

PARK COUNTY.

The population of Park County is now estimated at 11,500, and these figures are certain to be largely increased within a few years. The principal towns are Livingston, Gardiner, the National Park gateway, Aldridge, Electric, Fridley, Clyde Park, Hunter's Hot Springs, and Shields, the last named a new town five miles above Clyde Park in the Shields' River Valley. Livingston, the county seat, has a population of 5,100, and is rapidly growing improvements to business and residence property amounting to not less than $275,000 having been made in 1905 and 1906.

The local business of the Northern Pacific Railway is an important adjunct to Livingston, the shops representing an investment of $200,000 and the depot about $125,000, while the payroll is about $45,000 a month. The city has three banks, two newspapers, and a $12,000 Carnegie library, which is supported by a one-fourth mill tax upon city property.

Manufactures are coke, brick, cement blocks, lumber and cigars. To these will soon be added Portland cement, experiments having been conducted for several months in this direction and analyses of the rock has proven the entire practicability of the enterprise. The company having the matter in charge are now making cement blocks. One and one-half million feet of lumber was produced by ten sawmills in 1905. The mineral resources are gold, silver, coal and lime rock.

The possibilities of water power development, now wholly unutilized, are enormous. On the Yellowstone River, five miles south of Livingston, 100,000 horsepower can be developed, and on Brackett Creek, near Clyde Park, there is opportunity for at least 5,000 horsepower.

Park County is famous for its hot springs, Chico, Hunter's and La Duke all being favorite resorts.

Few localities in the State can show a more diversified list of agricultural products, or a finer record of specimen yields. The list includes wheat, maccaroni wheat, oats, barley, rye, alfalfa, timothy, clover, alsike, spelz, potatoes, tomatoes, sweet corn, melons squash, cucumbers, apples, cherries, plums and small fruits. In the Shields River Valley, including the dry farms, average yields are: Wheat, 40 bushels; oats, 70 bushels; and barley, 30 bushels to an acre. Timothy and clover and alsike will cut two and one-half tons an acre, but alfalfa does not do as well.

Dry land farms in this valley above Clyde Park have not had a crop failure in ten years, but below that place there have been repeated failures in that time. Average yields in the Yellowstone Valley are: Wheat, 40 bushels; oats, 70 to 75 bushels; barley, 30 bushels an acre.

Guy D. Hunter, who resides about two miles from Clyde Park, bought 320 acres at $2.25 an acre in 1890, from the railroad company. He and a neighbor built an irrigating ditch four and a half miles long that carries about 800 inches of water and cost about $3,000. He has made about $9,000 a year raising alfalfa and feeding sheep and cattle for Seattle butchers. In July, 1906, he was offered $25,000 for the place.

Bliler Bros. in 1906 raised 50 bushels of wheat to the acre on 200 acres of dry land. Fred Sumner had 116 bushels of oats an acre on 20 acres. Average prices in the county on these crops are: Wheat, 90 cents cwt.; oats, $1.10 cwt.; barley, $1.00 cwt.; alfalfa, $5 per ton; alsike, timothy and clover, $6.50; and timothy, $8 a ton.

All the wheat and oats needed for home consumption are raised and large shipments are made to Bozeman, Butte and Duluth, Minn. Not to exceed five per cent of the farmers are tenants. Ten threshing machines are owned in the county, and the charges for threshing are one and one half cents a bushel for oats; two cents for wheat and barley, and two and one-half cents for rye.

Miles & Bro. are erecting a 100,000 bushel elevator at a cost of $12,000.

Prices of land have increased in the Shields River Valley during the last two years 40 per cent, and in the Yellowstone Valley 20 per cent. The latter lands were higher than the former two years ago, and the extra increase in the Shields River land is simply a catching up with Yellowstone prices.

The price of cultivated irrigated land from Livingston to Clyde Park will run about $25 an acre, and from Clyde Park to the northern boundary of the county, about $15 an acre.

Non-irrigated land under cultivation in the same district from $7.50 to $10, and grazing land $3, having risen from $1 an acre in two years.

In the Yellowstone Valley, where practically no dry farming is done, land from Livingston to Fridley is worth $40 an acre, and from Fridley to Tom Miner Basin $20, with grazing land $3 an acre. Cultivated land in the county is estimated to be 145,000 acres, of which 125,000 acres are under ditch.

During the past two years the Brackett Ditch Association has taken water out Brackett Creek near Clyde Park. The ditch is five miles long, carries a thousand inches of water, and cost $1,500.

W. B. Jordan, of Miles City, has taken a ditch out of Shields River near Lat, which is twelve miles long, cost $3,000, and will water 2,500 acres of land.

The Clyde Park Mercantile Company is constructing a ditch to take 5,000 inches of water from the same stream near Myersburg, which will be nine miles long and cost $10,000 when completed.

Besides the Bell Telephone service, there is the Shields River Telephone Company, which has a main line from Livingston to E. G. Blair's, a distance of fifty miles, a branch from Clyde Park to Rock Creek, six miles; a branch to Chicken Creek, four miles; a branch from Clyde Park to Brackett Creek, ten miles, and a branch from Myersburg to the Gallatin County line, ten miles. The Lat Telephone Company has two wires from Myersburg to Lat, 19 miles. On this line there are about 100 phones, which cost the farmers $12 a year.

The whole number of acres of land assessed in Park County is 503,166. Of this, first class grain land gives 46,000 acres at $460,000; second class, 16,000 acres at $128,000; hay land, first class, 27,000 acres at $216,000; second class, 30,000 acres at $180,000; grazing land, fenced, 55,000 acres at $110,000; unfenced, 234,460 acres at $99,923; railroad land, 94,706 acres at $67,020. Mortgages aggregate $84,197, while the total value of all real estate and improvements is $3,198,068.

Four hundred and forty-four miles of telegraph line are taxed at $11,217, and 109 miles of telephone lines at $9,355, including $1,000 for the franchise. Irrigating ditches are valued at $7,880; bank stock, $116,011; insurance premiums, $18,639; machinery, $167,335; farming utensils and wagons, $223,250; goods and merchandise, $305,410. The livestock assessment is $668,498, with 5,125 horses including 29 thoroughbreds at an average of $307 each; 17,359 cattle; 65,153 sheep; and 637 hogs.

The total valuation of the county is $6,061,894, the largest item being $1,796,713 on personal property.

POWELL COUNTY.

There is no notable agricultural progress in this county. In few counties of the State even where the total area is much greater than that of Powell County, is the land ownership more concentrated. More than one half of the entire assessed acreage is held in private ownership by seven persons or companies. In the Deer Lodge Valley three firms own twenty miles of the most productive soil, one having 23,000 acres besides their leased holdings; another 17,000 acres, and another 13,000 acres. In another valley one man owns 26,000 acres besides his control of leased lands; and it is said that he can walk in the same direction for seventeen miles without stepping off his ground. This concentration of holdings has come about partially through the absorption of small ranches. Besides these holdings the Big Blackfoot Milling Co. owns 106,473 acres, and the Northern Pacific Railway Co. owns 72,895

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VIEW OF PLAINS, SANDERS COUNTY.

acres. Of the assessed acreage of the county, 512,306 acres, probably not more than 25,000 acres are cultivable grain and hay lands. All kinds of grain and vegetables are grown, but the principal business is stockraising and the production of forage crops and hay.

The entire northern end of the county is occupied by the Lewis and Clark and Hell Gate Forest Reserves.

The mineral resources of the county are being developed in a most systematic manner, and the production of precious metals will soon be largely increased.

A dam is being constructed on the Big Blackfoot River about 40 miles from its source, at the mouth of the Big Blackfoot canyon, preparatory to the erection of an electric power plant that will supply the power for mining operations on the famous porphyry dike which begins near Rimini in Lewis and Clark County. The plan includes the erection of a 1,000 stamp mill on the Little Blackfoot River about two miles from Elliston to which the ore will be conveyed from the mine over the proposed Basin and Elliston railroad. This is another example of the development of large bodies of low grade ore, which have been known for years, but passed over as worthless because of the absence of profitable methods of working or from the fact that ore of higher value was still abundant. The consummation of this undertaking will add to the already long list of really great industries in Montana.

The Gold Creek Placer Mines Company, Limited, installed a dredge at Pioneer in January, 1905, where they own 1,745 acres of placer ground. Various difficulties, among which was the washing out of the dam which supplied water, caused a cessation of work for a time, but operations were resumed in the summer of 1906 and are still in successful progress.

An Iowa company installed a dredge on Dry Cottonwood Creek, 20 miles from the town of Deer Lodge and about 8 miles from Racetrack Station, for mining gold and sapphires. This dredge was only in actual operation, for the purpose of a test, for two hours, it being at once apparent that its construction fell short of the requirements and specifications, so that bed rock could not be reached by some three feet. However, in this brief test run, by which the dirt was removed to only a superficial depth, more than two quarts of sapphires and a little gold was extracted. The dredge is now being remodeled and improved, so that it will be possible to reach bed rock, and operations will be resumed in the spring of 1907.

Stockraising being the chief occupation aside from mining in Powell County, the principal crop produced is hay and the majority of this is native. Some alfalfa is grown and in the Deer Lodge Valley oats are raised, while there are numerous very creditable orchards and all small fruits do well.

The character, area and value of lands as shown by the assessors' returns are as follows: Grain land, first class, 2,000 acres, $20,000; second class, 10,000 acres, $70,000; hay land, first class, 4,000 acres, $40,000; second class, 20,050 acres, $140,350; grazing land, fenced, 300,000 acres, $300,000; unfenced, 25,000 acres, $25,000; timber land suitable for saw logs, 125,000 acres, $350,501; all other timber land, 53,301 acres, $91,587; railroad land, 72,895 acres, $4[illegible];

mining claims, 14,551 acres, $39,463. There are about 60,000 acres of school lands. Thirteen ditches aggregating 48 miles in length are taxed at $288 a mile or $13,830; 1,075 miles of telegraph line at $22,204; 294 miles of telephone line at $9,884; insurance premiums, $7,850; bank stock, $58,600; mortgages affecting $180,000 worth of property at $58,753, while the total value of all real estate and improvements is $1,714,708. Livestock is taxed $591,196 on 78,770 head, which includes 4,102 horses, 19,581 cattle, 54,933 sheep, 146 hogs, and 18 Angora goats.

RAVALLI COUNTY.

The chief attraction in this county is the well known and world famous Bitter Root Valley. From spasmodic efforts in early days with early apples and crabs there has been developed the most extensive fruit orcharding in the State. Throughout the valley for many miles there are orchards on every farm with numerous localities where thousands of fruit trees are the property of one person or a county. Competent judges have pronounced the product of Bitter Root orchards to be the finest apples grown in the United States. They are particularly free from blemish and worms, the active labors of the fruit inspectors under the direction of the State Board of Horticulture having practically eliminated the San Jose scale, the codling moth, and other pests so commonly destructive to fruit and trees in older states. Strict enforcement of the wise laws now on the statute books will serve to prolong these conditions for many years.

New orchards which are rapidly coming into bearing contain principally one brand of trees, so that it is now possible for buyers to obtain carload lots of one kind of apples from the same grower, a condition impossible in earlier days, and one greatly to the advantage of the seller. In 1905 about 400 carloads were shipped to eastern markets. In 1906 the crop was injured by unfavorable weather in the spring of that year and the fall before. No permanent damage was done to the trees, however, and all the growers are satisfied and enthusiastic. There are many instances of splendid returns in this industry, but lack of space forbids the mention of more than one. During the season of 1905 William Teidt, who owns an orchard of about 40 acres, only about 20 acres being in mature trees, realized $10,000 for the apple crop. Fruit lands are expected to yield an average of $100 to $200 an acre.

The strawberry, gooseberry, currant and raspberry are indigenous to the soil and yield abundantly. Bitter Root strawberries, in particular, have a wide reputation for size and flavor, and through irrigation their season is prolonged until August, when the berries from the west and south have disappeared from the market. There never has been and probably never will be, a surplus of Bitter Root strawberries. Cherries, plums and prunes are grown to perfection, with some peaches and apricots. There are many market gardens and the valley furnishes a large surplus of sweet corn, melons, squashes, cabbage, turnips, potatoes, tomatoes, celery and other vegetables.

Grain of all kinds is also grown on a large acreage, with an average of 50 bushels of wheat and 80 bushels of oats to the acre for the county. In

1906 S. F. Werner, living near Victor, raised 68 bushel s of hard spring wheat an acre from 76 acres.

B. F. Plummer of Stevensville harvested 12,000 bushels of oats from 200 acres.

On the famous Marcus Daly farm at Hamilton, wheat in 1906 ran from 40 to 60 bushels an acre, oats from 40 to 85 bushels, hulless barley 25 bushels. Two cuttings of alfalfa yielded 4 tons an acre, the same of clover 3 to 3 1-2 tons, and one cutting of timothy 2 tons. Sugar beets grown on the farm yielded 16.9 tons an acre.

With the expectation of having a beet sugar factory, contracts for 4,000 acres of sugar beets were secured for the season of 1906, but these were allowed to lapse and but few were grown. There is, however, reason to believe that Ravalli County will soon have a plant of this kind.

Livestock of all kinds find abundant pasturage for ten months in the year, with the result that milch cows produce more butter fat from a given quantity of milk than in any other state.

The unvarying and unqualified success of the creameries in the valley, which outnumber those of any other county in Montana, attests the adaptability of this section to this important and profitable industry. There is a constant and growing demand for all the butter now produced, and more would be made and sold if the cream could be secured.

The resources of the valley are by no means confined to the agricultural products of the soil. Valuable mineral deposits abound and several good mines are being developed and operated at the present time. At the headwaters of the West Fork of the Bitter Root River is the Mineral Hill district, covering an area of 50 square miles, containing surface indications of rare richness. Wagon roads are now being constructed, and it is practically certain that a railroad will reach the district within the next two years.

On the west side of the river in the Pleasant View district is the famous Curlew mine, which in the past has paid large dividends and at present is a steady producer. The Ore Finder in the same district is practically undeveloped, but gives promise of great richness.

Eighty miles south of Hamilton are great deposits of coal and with the advent of the railroad into that section there will be fine openings for many lines of manufacturing. Surveys for a road are now being made in that vicinity. The principal manufacturing industry is lumber, and the finished products made from it. The sawmill of the Anaconda Mining Company at Hamilton has a capacity of 150,000 feet of lumber a day, and employs 150 men. The logs required for this mill come from the mighty forests lining the river and its tributaries, and the logging operations keep an army of men busy the year round. Logs are brought to the mill by train, and it is a great sight to see them dumped into the mill pond by carloads. The company also operates a sash and door factory, box factory, lathe mill and planing mill. Here thousands of boxes are made in which the apples grown in the valley are packed. During the year ended June 30, 1905, 117,803 boxes were made, and this year there were 176,100 boxes turned out.

The River View Manufacturing Company also has in operation a planing

mill and sash and door factory. Other industries consist of a creamery and an excellent flour mill representing an investment of $100,000. The mill has a capacity of 150 barrels of flour a day, and during 32 weeks in 1905 produced 20,000 barrels. The capacity of the mill elevator is 60,000 bushels.

Hamilton, the county seat, is located on the east bank of the Bitter Root River near the center of the county, and about 45 miles south of Missoula. The town is famed for its beautiful, healthful surroundings, and during the summer season attracts many visitors who enjoy the delightfully dry, invigorating air and the always cool, refreshing evenings. The mountain ranges with their diverging spurs protect the valley from the cold east winds, while the prevalent "chinook" from the Pacific coast renders the winters in this favored locality much less rigorous than in other portions of the State.

One of the finest hotels in the Northwest affords excellent accommodations for tourists and is always comfortably filled during the season. Outside of Hamilton there are a number of favorite resorts and hot springs, which attract many visitors.

While there are many large tracts of land that are supplied with water for irrigation, and results are invariably better from such farms, there is some dry land farming besides extensive areas of unproductive bench lands. The latter has always offered an attractive field for investment in irrigation enterprises, and a government reclamation project was abandoned here after thorough investigation only because all the land under the proposed canal was in private ownership. This project has been revived by the advent of the Bitter Root District Irrigation Company.

The importance of this project to the State of Montana and to the Northwest is indicated by the fact that it is the largest ever undertaken in an ideal fruit growing district. A total of about 35,000 acres of the best land of the Bitter Root Valley is the acreage involved, and the company will develop its project chiefly from the point of view of orcharding. A contract has already been let, in fact, for 500,000 apple trees to be delivered in the spring of 1908. These, together with smaller quantities of pears, cherries, prunes and plums, will be set out at that time on a large tract of land, which will make one of the most important orchards in the world.

The canal of the company has its origin in a natural reservoir at Lake Como situated, 460 feet above the Valley in the most important mountain group in the Bitter Root Range. At the outlet of the lake will be constructed a 75-foot dam which will conserve the flood waters not only of the Como Basin, but also of the neighboring basin of Lost Horse Canon. The company owns and controls an independent water supply, since the lake itself and the drainage basin lie entirely within the Bitter Root Forest Reserve, and is granted to the company by the Department of the Interior. By flumes and ditches the water will be led from Lake Como two miles to the Bitter Root River; there a double pipe line of red wood with a hydraulic head of 170 feet conducts the water under the Bitter Root River and up the opposite rocky slope to a height of 150 feet. From this point there are several miles of ordinary high line canal work with occassional flumes and trestles until

a deep gulch called Sleeping Child, intervenes. Another double pipe line about a mile in length and with a hydraulic head of 240 feet carries the water to the next bench. With the exception of one more gulch, the rest of the canal is comparatively plain work from an engineer's point of view, although there is a large amount of rock excavating to be done including one tunnel of 1,400 feet. The most unusual feature is the pipe line at Sleeping Child Gulch where special construction will be used to insure safety and permanence. Another striking feature is the reservoir and dam site at Lake Como. A five foot rise of the water at its present stage will multiply the length of the lake four times and double its cubic capacity. The total length of the main canal is about 70 miles and the expense involved is unusually large owing to the fact that for most of this distance the construction work is along the side of a rocky and gravelly slope, cut at short intervals by small gulches. The cost of the canal, in fact, would be prohibitive in practically every other region of the Northwest. But the unlimited possibilities for fruit-raising in this highly favored valley more than warrants the unusual outlay now being made by the company.

The land reclaimed by the new canal lies in a long, narrow body, extending from the famous Daly estate at Hamilton, 25 miles down the valley to a point opposite Florence. Perhaps the most unique element in this whole project is the fact that this land actually touches for its whole distance some of the best irrigated land in the United States and is contiguous to a most advanced agricultural community, where about 12,000 people live prosperously on 75,000 acres of irrigated land and where educational facilities, transportation and social advantages have long since been unusually advanced. During the next several years it is more than likely that the Bitter Root Valley will be known throughout the land as one of the golden opportunities still remaining in the Northwest to the investor in fruit lands. It is to be most important single agricultural interest in Montana, and must contribute very much towards giving it a deserved reputation and rank as an agricultural state.

It is understood that this land will be put on the market early in the spring of 1907. The canal will be completed in the fall of 1907, so that it may be well seasoned and primed by the following spring. The home office of the company is at Hamilton, Montana; its eastern office is at the Railway Exchange Building, Chicago, Ill.

ROSEBUD COUNTY.

The population of Rosebud county is estimated to be about 3,000, having increased by not less than 600 during the past two years. The principal occupation is stockraising as the livestock assessment will show. There is no dry land farming, and the total amount of irrigated land in the county is between 16,000 and 17,000 acres of which not over 7,000 is under cultivation, the rest being devoted to the production of winter forage for sheep and cattle. The principal farming district is along the Yellowstone River, and the soil and climate are such as are common to other parts of the valley of

this stream. Wheat, oats, barley, white dent corn, and all kinds of vegetables and fruit raised elsewhere in eastern Montana, do well in Rosebud. Large quantities of alfalfa, timothy and clover are grown, but both wheat and oats are shipped in for local use. From the southern part a small surplus of farm produce is sent to Sheridan, Wyo.

Irrigated, cultivated land is worth from $30 to $50 an acre, and has doubled in price in the last five years. Non-cultivated land with water is worth from $30 to $40 an acre, and grazing land about $1.25 an acre.

Wheat will average throughout the county about 40 bushels, oats about 60 bushels an acre, though there are many instances of 75 bushels of oats an acre yearly. Potatoes will average 200 bushels an acre, and are very fine as are all the root crops.

Hon. Tom Alexander raised 100 bushels of wheat an acre, and 600 bushels of corn from 10 acres in 1905. The price of wheat and oats in this year was $1.50 cwt. The unceded portion of the Crow Indian Reserve is about 30 by 70 miles in area, and the Indians do some farming and a great deal of stockraising. There is a fine irrigating canal built by the Indians themselves, supplying a community farm which produces fine crops of grain and hay. There is also a good flour mill. The agent is Mr. S. G. Reynolds, Crow Agency, Montana.

The Cheyenne Indian Reserve is about 30 miles square, with Mr. J. C. Clifford, Lamedeer, Mont., as agent. The Indians on this reservation are not as progressive in an agricultural way as those of the Crow. An industrial and agricultural fair conducted by the Indians is one of the features of Rosebud county, and in 1906, the first county fair was held in Forsyth, the commissioners appropriating $600 from the county funds for premiums. Officers of the fair association are: M. S. Lord, president; W. E. Choisser, Sr., treasurer; W. E. Johnson, secretary.

Manufactures are confined to brick and cement blocks, and the only developed mineral in the county is coal.

Forsyth, the county seat, and Rosebud are the principal towns, and the former has three banks. The assessed valuation of all property is $5,259,185, an increase of nearly $700,000 over 1905, aside from that made by raising the valuation of the railroads. The bulk of the advance is made in livestock, which rose from $1,525,398 last year to $2,039,013 in 1906. The whole number of animals returned is 387,617, and is made up of 7,153 horses taxed at $227,489, including two thoroughbreds at $925 each; 48,902 cattle, $814,250; 331,185 sheep, $995,157; 257 hogs, $1,757, and 120 angora goats, $360.

Mortgages to the amount of $33,700 are returned, while the total value of real estate and improvements is $1,312,064. The value of property affected by mortgage is $45,000.

SANDERS COUNTY.

This is the latest addition to the list of Montana counties, the legislature creating it becoming operative March 1, 1906. Its area will be materially increased by the opening of the Flathead Indian reservation, but this advan-

tage will be greatly offset by the creation of the Cabinet Forest Reserve, which has already been withdrawn from settlement but not actually created. The natural resources of this district are great and varied. The mountains contain valuable mineral deposits, and while there are no paying mines, a number of properties will soon reach that point, unless all present indications fail. The benches and mountain slopes are covered with the finest qualities of timber and the lumbering industry of the county is in an advanced stage of development, the many mills supplying lumber to Butte, Missoula, Helena and other cities of the State, while immense quantities are sent to the south and middle west. Hundreds of men are employed in the mills and logging camps at good wages. Lying across the second range of mountains, the general elevation of the county is low, and the climate remarkably mild and equable, while the average rainfall is sufficient to mature three fourths of all crops without irrigation. Agricultural products include everything grown in the State, and no section is more favorable to fruit growing, apples, plums, pears, peaches, apricots, and grapes, maturing in splendid quantity and quality. Mr. M. H. Pierce held the silver cup for the finest fruit display at the State Fair three consecutive years.

The average yield of wheat from all kinds of land is about 25 bushels an acre and of oats about 50 bushels. There is a good home market for everything grown, but much produce is still shipped in from other places.

Irrigated lands in Plains Valley are worth from $75 to $100 an acre, and non-irrigated from $25 to $40. Values have doubled in the last five years.

Population of the county is now about 3,200, and is rapidly growing larger, having increased since 1904 by 600 or 700.

Principal towns are Plains and Thompson, the latter being the county seat. There are six churches, three newspapers and one bank in the county. Aside from agriculture and stockraising, lumbering is the chief industry. Plains has a $15,000 flour mill which was completed on May 8, 1906. It is owned by the farmers and business men of the community and should prove highly profitable to the owners as well as a great incentive to an increased grain acreage. Thompson has a well equipped brick yard and pottery plant, which is making jugs, vases, jars and flower pots. This is the only pottery factory in the State which makes glazed earhernware; Henry Florin is the proprietor.

Much of the land available for agricultural purposes in this county is stump land, which must be cleared before cropping. It is now the property of the lumber companies who have removed the timber. There are many instances, however, where fruit trees have been set out right among the stumps and are doing well. The orchards grow while the stumps decay, and in due time are removed, allowing the ground to be plowed.

Mineral resources are gold, silver, lead and antimony. In assessed valuation Sanders shows a remarkable total for a new county, the returns aggregating $3,253,128. The largest item is the railroad assessment which reaches $1,850,988. Mortgages are returned at $61,159, and the total of real estate and improvement is $955,635. The table of land assessment shows

981 acres of first-class grain land, $15,142; second class, 5,334 acres, $51,148; hay land, first class, 861 acres, $7,885; second class, 1,499 acres, $13,271; grazing land fenced, 7,724 acres, $19,290; unfenced, 8,585 acres, $18,826; timber land suitable for saw logs, 271,156 acres, $748,773. Three irrigating ditches with an aggregate length of five miles are assessed at $3,600, or $720 a mile, and 121 miles of telegraph and telephone line at $22,235. The livestock assessment is small, there being no sheep in Sanders county. There are four thoroughbred horses averaging $235 each; 536 range and 581 work horses; 2,446 cattle, 163 hogs, and 300 angora goats. The enormous water power of the Thompson's Falls of the Clark's Fork of the Columbia River at Thompson is about to be developed to furnish electric power for use in the mines of the Couer d'Alene district. A company has been formed, and a dam and power house will be erected as rapidly as the necessary labor and materials can be obtained. Few places in the State offer a better opportunity for an enterprise of this character than Thompson Falls.

SILVER BOW COUNTY.

The general conception of this county is based upon its vast production of minerals, and there are few who realize that along with this great industry there are many other adding their quota to the wealth from the mines and furnishing employment to many people. It is true that there is but one really great industry in Silver Bow County, and that this is of such stupendous magnitude that everything else is dwarfed in comparison; nevertheless, Butte manufactories are in splendid condition, turning out large quantities of first-class goods, and rapidly demonstrating their ability to supply the needs of the home market. One of the oldest concerns is the Montana Mattress Company, which was started in 1896 as the Chapman Mattress Company with a capital of $10,000, but now increased to $30,000. Sixteen people are employed in the manufacture of felt, hair, wool and all kinds of woven wire mattresses, with a range in value from $3 to $50. Bed springs and excelsior are also manufactured and sold at wholesale to other dealers. The chief drawback against this business from the start has been unfavorable railroad rates, which have restricted the market for the product to Billings on the east, Fort Benton on the north, Dillon on the south, and Missoula and Hamilton on the west. Success, therefore, can only be attributed to the superior quality of the home-made articles, for it is said that competition has been so strong as to force prices to a point where profit was cut to as little as 10 cents on a mattress. The factory is equipped with a full complement of modern machinery, and prospects for the future are very bright. Officers of the company are: C. H. Lane, president; F. M. Dolan, secretary-treasurer; Wm. Schleiger, vice president and manager. The office and factory are at 601-605 East Platinum street.

The Crescent Manufacturing Company occupy their own three-story brick building at 337 South Arizona street, and are engaged in manufacturing every variety of burial caskets, which range in wholesale price from $15 to $100. This business was commenced in 1903 and represents an investment

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VIEW OF HINSDALE VALLEY COUNTY.

of $40,000 exclusive of the building. The product is shipped to all parts of Montana to states west and south, and to a large trade in Washington and Oregon. E. H. Sherman is president and general manager; Guy L. Smith, secretary-treasurer of the company.

The Capital Casket Company, located at 258 East Mercury street, has an investment of $10,000, and is not incorporated at present. Business was begun June 11, 1906, in a three-story frame building 27 by 40 feet, to which has been added a frame structure 27 by 60 feet, also three stories high. Electric power is used in the manufacture of caskets, robes, and linings, and there is a jobbing department handling undertakers' hardware and supplies. These are the only casket factories between Minneapolis and Spokane.

The Butte Trunk factory at 218-220 East Park street, began business in 1901 on a capital of $800, which has since been increased to $5,000. The proprietor, Mr. S. Witofsky, at first manufactured for the wholesale trade, and easily met eastern competition, but later placed the product on he retail market as being more profitable. A specialty is made of trunks to order.

Mr. H. M. Fenburg is proprietor of the Montana Trunk Factory at 63 West Broadway. Trunks of every grade from $2 50 to $100 in price are made, besides telescopes and sample cases of all descriptions. The investment in this business is $2,500.

In connection with a general photograph business, W. S. Hawes conducts the Montana Button House, and during 1900, 30,000 campaign buttons were made. Original designs are furnished if required, and all kinds of jewelry, photograph, campaign, and advertising buttons supplied, from 30-line to 90 line in size. The factory alone represents an investment of $1,500.

In addition to the above described concerns, there are several candy and cigar factories, foundries, planing mills, sash and door factories, creameries, a packing plant, and various other enterprises of lesser magnitude, showing that other interests have not been neglected in the over-shadowing development of mineral resources. The high price of copper, and the even pace which consumption of this metal keeps with the world's production, together with the many new properties discovered and opened during the past two years, have combined to make Butte the most prosperous community in the State, if not in the Northwest. All predictions that the mines would soon be worked out have been proven false through the opening of still vaster bodies of ore than any heretofore discovered.

The prediction is freely made that Butte's population will be increased by 10,000 during the next two or three years and the present prosperity will continue indefinitely.

It is a pleasant duty at this time to record the fact that conditions which formerly made Butte so undesirable as a place of residence have changed so materially as almost to pass belief. The smoke nuisance is a thing of the past, with the result that Butte is no longer a barren waste devoid of all vegetable life, but trees, grass and flowers abound, and people generally are engaged in the work of beautifying their yards and grounds.

While this much-to-be-desired improvement has only been made possible

by the removal of all but one of the great smelters, developments in other industries have not only overcome the inroads made in the number of men employed, but payrolls are greater than ever before. True, Butte is a long way from being a garden spot like Billings or Missoula, but the change is as marvelous as it is welcome.

Some idea of the volume and magnitude of Silver Bow County's chief industry may be gained from the railroad tonnage, said by many to be the wonder of the railroad world.

The total output of all the properties now producing ore is nearly 14,000 tons daily, and practically all of it is hauled by rail either to Anaconda or Great Falls.

It requires 261 cars of 50 tons capacity each to carry this ore, which would make five trains each half a mile long. Again, more than 150,000,000 feet of timbers are brought in principally from Western Montana and Idaho, for use in the mines alone each year.

One railroad hauls for one company 50,000 tons of coal a month, while the copper shipments of ingots and matte reach a total of 300,000,000 pounds every 12 months. The daily traffic between Butte and Great Falls amounts to nearly 10,000 tons. These are some of the items in a freight business divided between three transcontinental roads which is said to reach the marvelous total of 180,000,000 tons yearly.

The agricultural development of Silver Bow County is very limited, but it will always continue to be a great and profitable market for the surplus products of more favorably situated counties.

In land values the assessment rolls show 265 acres of first-class grain land worth $3,440; 119 acres second class worth $1,090; 989 acres first class hay land worth $9,770; 2,238 acres second class worth $16,680; 18,166 acres grazing land fenced worth $90,425; 11,993 acres unfenced worth $24,115; 135 acres of other lands worth $31,515; and 18,465 acres of railroad lands worth $35,605.

Mortgages affecting $600,000 worth of property are listed at $388,850 while the total value of all real estate and improvements is $17,008,710.

Net proceeds of mines show an increase of nearly 100 per cent, being $18,653,695, as against $9,956,430 in 1905. Machinery is valued at $1,205,705; bank stock, $997,695; insurance premiums, $237,035; solvent credits, bank deposits and money on hand, $1,431,930; 2,295 horses $90,880; 3,636 cattle $88,440; 2,525 sheep, $6,775; 381 hogs, $1,980. The total livestock assessment is $188,075.

Silver Bow is the only county of the first class in the State having a total valuation of $48,428,575. These figures show an increase over 1905 of $11,613,263.

SWEETGRASS COUNTY.

This county possesses magnificent opportunities in agriculture, water-power, stone quarrying, and manufacturing, but for some unaccountable reason, development is not keeping up to what might reasonably be looked for. Soil and climate are both good, and while the seasons are prob-

ably as dry as in any locality in the State, there is a good supply of water for irrigating purposes.

The woolen mill is idle and the flour mill was recently dismantled and sold to a company in Plains. Three thousand horse power could be developed all the year round at the natural bridge on Boulder Creek, 30 miles southwest of Big Timber, and there is some prospect that this will be done. Mineral deposits of gold, silver, copper and lead have been discovered, and some placer and lignite coal ground, but operations are now entirely suspended. Within a mile of Big Timber lies one of the best sandstone quarries in the State, from which a good percentage of the business buildings of the town have been erected, as well as a number of residences, all of which testify to the exceptional character of the stone, both in the matter of durability and appearance. It is now quarried by those who desire it without any charge.

The census of 1900 gave the county 3,086 inhabitants, and the population is now estimated at 3,500, the last two years showing an increase of perhaps 5 per cent.

The principal occupations are stockraising and some farming, and not more than 5 per cent of the farmers are tenants. There are no farmers' organizations, no acreage of sugar beets for the Billings sugar factory, and no free rural delivery of mail, though along some of the stage routes the accommodations extended by the drivers are almost, if not quite, the equivalent of the postoffice department. There is an active fair association, of which Mr. H. O. Kellogg is president, and Mr. L. F. Bouthett, secretary. Aggregate premiums for 1906 were $10,000.

The public library in Big Timber is supported by the city and small fees. The town also has two banks and one newspaper.

Sweetgrass is well supplied with rural telephones, having the Dry Creek Company, whose lines run from Big Timber up the Lower Boulder Valley and Dry Creek about 30 miles; the Boulder Company, which operates 40 miles from the same city to the Upper Boulder Basin in the McLeod country; the Northern Company which connects Big Timber and Melville, a distance of 50 miles; and the Howie Company which connects Big Timber with the postoffice at Howie and the Lower Sweet Grass country.

Nye City has a phone line giving service to farmers in that vicinity, though most of this line is in Carbon county.

While irrigation is the proper and popular practice in this county, there is a small percentage of dry land farming done, the greatest success being achieved in the production of rye for hay, during three dry seasons last past. This work is purely experimental, however, and only the records of a longer term of years can determine its success or failure.

The average yield of wheat is 35 bushels and of barley, 40 bushels an acre. Instances of 100 bushels of oats an acre are common, but perhaps 50 bushels is a fair average for the county.

Any location will yield two cuttings of alfalfa, the bench lands which are sometimes short of moisture raising from three to three and one-half tons

an acre, while on more favored lands the yield is from four to six tons. Timothy yields from two to three tons an acre, and a mixture of timothy and alsike has proven to be both a good yielder and satisfactory feed. Where clover has been tried it has done remarkably well.

The amount of land under cultivation has doubled during the last 10 years, from 10 to 15 per cent having been added in the past two years. A few private holdings of land contain as much as 10,000 acres each, but there is a general disposition to sell these off in smaller tracts. Cultivated land is worth from $20 to $35 an acre, though in 1906 some was sold at $60. It is estimated that the price of land has doubled in five years.

The practice of impounding surplus water in reservoirs during the early season for use in the fields later, is rapidly coming into favor in Sweetgrass county, and there are now four of these systems in operation. All proved their usefulness during the extremely dry seasons of 1904 and 1905.

Active operations in private irrigation enterprises have been carried on in recent years. The Dry Creek Canal Company has enlarged the upper end of its canal from two feet in depth to three and one-half feet during the last two years, and has made a seven-mile extension of the ditch which will irrigate an additional thousand acres at a cost of $4,000. It also proposes to construct an additional 10 miles of ditch.

In 1902 the Clarke McKenzie ditch was begun at a point one mile west of Springdale, taking water from the north side of the Yellowstone River. The length of the ditch is 10 miles; it is 10 feet wide at bottom, carries three feet of water, and covers 2,000 acres of land. The cost was $10,000. This is a privately owned ditch, but perpetual water rights are sold. The work was completed during the summer of 1906. The Lebo Lake Irrigation Company began work on a somewhat complicated but thoroughly feasible project, which will take water from American Forks and Big Elk Creeks, into Lebo Lake, which will be used for a reservoir, being distributed finally through a district twenty-five miles square. This enterprise will involve a large expenditure of money, which will naturally be apportioned over a number of years.

Through the efforts of Mr. A. Wormser, a colony of Hollanders was located upon a tract of irrigated land which they were expected to bring under a high state of cultivation. Unfortunately, most of them have sold out and gone to the state of Washington. This was brought about more through the social than industrial discontent, the pioneer conditions not affording them the social and religious privileges which they had been accustomed to enjoy.

The altitude of Big Timber is 4,072 feet, while that for the county ranges from 3,500 feet to 5,000 feet. This has its effect upon horticulture, some places being entirely unadapted for fruit, while others are as favorable for it as any other part of the State. Apples, plums, some pears, and all the small fruits are grown.

In all, 592,197 acres of land are assessed, the aggregate valuation being $1,204,037. Character, area and value are, grain land, 9,000 acres, $108,000;

hay land, 66,000 acres, $528,000; grazing land fenced, 344,391 acres, $428,145; unfenced, 98,000 acres at $1 an acre; 74,806 acres of railroad lands, $41,892, an average of 56 cents an acre. Mortgages upon land amount to $43,543, while the total valuation of real estate and improvements is $1,652,271. The valuation of all property shows an increase of $456,188 over 1905, of which nearly $150,000 is in livestock. The returns upon this class of property show 3,377 horses at $137,510; 24,878 cattle, $373,362; 247,477 sheep, $743,789; 506 hogs, $2,530; and 1,324 angora goats, $3,972. This totals 277,562 animals, worth sils, $11,756.

There are 52 miles of telegraph line assessed at $11,874; 141 miles of telephone line, $7,552; insurance premiums, $9,072; deposits in bank, solvent credits, and money on hand, $5,300; machinery, $15,005; and farming utensils, $11,756.

Mr. P. L. VanCleve, who lives about 30 miles from Big Timber, reports a feeding experiment on 300 lambs which, weighing 55 pounds each in the middle of November, 1905, showed a gain of 35 pounds each after 119 days feeding. At the start they were fed a daily ration of alfalfa with a half-pound of oats, and this was gradually increased to a grain feed of a pound a day, consisting of a half-pound of oats, and one fourth pound each of wheat and barley, with two and one-fifth pounds of alfalfa. The total of grain fed to each animal during the 119 days was 100 pounds, which cost one cent a pound. The hay was valued at $5 a ton. Racks were used in feeding, and the drinking water was heated sufficient to remove the chill.

Mr. VanCleve also tried the experiment of raising ten acres of macaroni wheat to be used for feeding purposes, with such satisfactory results that the acreage was increased to 60 this year. The yield was 30 bushels an acre, without irrigation. Thirty bushels of spelz an acre was also grown without water, and this could easily have been increased to 45 bushels had water been applied in August.

TETON COUNTY.

The activity displayed in other portions of the State in agricultural development through irrigation is present also in marked degree in Teton County, and this section is rapidly growing because of the opportunities afforded by these various enterprises. The soil is generally a gravelly loam, very free from rocks and there is an abundant water supply. The numerous valleys are being settled by a most desirable class of citizens, and the population of the county will be largely augmented as the various irrigation projects of the Government and private parties are completed. Indeed, few localities offer greater inducements to settlers. The soil is rich and productive, the climate is good, and land prices are considerably lower than in other sections.

The opening of the Blackfoot Indian Reservation, the settlement of present difficulties over water rights; the completion of the Government Sun River irrigation project, together with small private ditches, will prove a combination of attractions that will place Teton county well to the front in production, population and wealth.

To augment the water supply of the $1,000,000 ditch built by the Conrad Investment Company, a reservoir to conserve the flood waters of Birch and Dupuyer Creeks was begun in 1904, and work was completed in the fall of 1906. This reservoir covers 3,000 acres of ground and at the present writing (Nov. 1906) contains 25 feet of water which has been in storage since last spring, which represents the surplus of a year's supply after all the settlers along the completed portion of the diversion ditch and its laterals had been served for the season. The capacity of the reservoir is twice the above quantity. The feeding canal is 20 miles long and the main canal from the reservoir is 100 miles long with 350 to 400 miles of laterals. Land under this ditch, with a perpetual water right is sold at $17,50 an acre.

During the past two years 120 families have settled upon these lands, and the fertility and value of their holdings has been incontrovertibly attested.

On raw breaking, the first crops yielded 40 bushels of oats, and 25 to 30 bushels of wheat an acre. Mr. A. J. Kemper raised on newly broken ground, 60 bushels of brewing barley an acre, and an exhibit of this grain took first prize both at the Northern Montana Fair and the State Fair.

From 73 acres broken in June, 1906, and immediately seeded, Mr. W. A. Conrad threshed 2,500 bushels of oats. The stand of this grain is often so heavy as to make harvesting difficult.

Little attention has been paid to horticulture, but small fruits and vegetables are grown in rich abundance. Mr. J. Vanderhull, who lives four miles east of Conrad, dug 335 bushels of potatoes an acre from a seven acre field. They were large and mealy, and it is said that he filled a 100 pound sack from two hills.

The Teton Co-operative Canal Company has a reservoir site which contains 5,300 acres and will hold 59,000 acre feet of water. Work was begun on the diversion ditch Oct. 1, 1906. The dam will be 62 feet high and 2,100 feet long, and is designed to store the flood waters of the Teton River. The location of the work is 18 miles west of Chouteau, and it is estimated that the total cost will be $250,000. Land under the ditch is already in private ownership, and the cost of construction and maintenance will be borne co-operatively by those directly benefitted.

Much attention has been given by the people of Teton County to the question of sugar beet culture, and there is small room to doubt that a sugar factory will be built as soon as conditions warrant it. The Burton bench, long famous in the State, is peculiarly adapted to beet culture, as is the Sun River Valley. Irrigated land on the bench is worth from $40 to $50 an acre. The principal town and county seat is Chouteau, a thriving place having a good location and progressive people. The new town of Conrad is rapidly assuming importance, having a population of 150. One of its new institutions is a $3,800 hospital which is being erected from contributions made by citizens of the county.

Timber supply is limited but there are generous coal deposits, which constitute the chief mineral resources. There are no railroad lands.

Teton County shows an advance of more than $600,000 in assessed valuation over 1905, the principal items of increase being $172,764 in railroad assessment, $135,606 in livestock, and $271,047 in land. Here again land is not returned as to character, the total figures alone being given. These show 343,508 acres valued at $1,257,058, an average of about $3.65 an acre.

There are 210 miles of telegraph line at $17,280; 300 miles of telephone line, $5,880, and leased telephone instruments pay $795.

Mortgages aggregate $79,593, with the total value of real estate and improvements $1 728,069; insurance premiums, $9,267; bank stock, $21,440; machinery, $12,680; farming utensils and wagons, $59,246.

Livestock is assessed at $1,485,916, and the list includes 6,789 horses, 35 of which range in value from $300 to $1,000 each, there being 5 of the latter; 46,378 cattle, $777,470; 163,443 sheep, $482,140; 128 hogs and 2 goats.

VALLEY COUNTY.

The rapid settlement of certain portions of this county, which has been heretofore considered as worthless for agricultural purposes, is really marvelous. In a stretch of country 24 miles long and 20 miles wide, where nothing but township lines have been surveyed, every quarter section of land has been located upon during the past four months. This district lies from Culbertson north up to and surrounding Medicine Lake. This lake, 30 miles in circumference, lies about three miles east of the Fort Peck Indian Reservation boundary, and is the natural drainage basin for a large surrounding country. A government survey of all lands east of the Big Muddy River has been ordered, and will be completed about June 1, 1907, at which time the settlers will be able to make homestead filings on their locations. One cause of the great influx of settlers to this region was the announcement that a large number of Turtle Mountain Indians were coming from South Dakota during the year 1906, to settle upon Valley county lands. This matter was fully discussed by the people of Culbertson and vicinity, with the result that committees were sent to Williston, N. D., and homeseekers' excursions organized to bring in settlers before the Indians could reach there. An old Missouri River steamboat was remodeled and put into service in this work, and so effective were the efforts of the committees that but few of the Indians ever made settlement in the State. Between Culbertson and Medicine Lake there is not a vacant piece of land. The new comers are representative citizens of all classes, who will undertake general farming. There is no water available for irrigation and these people say they don't want any. The country is a high plateau, and there is a clay subsoil over-laid with from two to three feet of sandy loam. The people are very enthusiastic, and claim they will have one of the richest farming communities in the State. There is said to be much land of the same character north of the lake and across the county north of the reservation. The elevation of Culbertson is only 1,927 feet, and the rainfall is from 11 to 14 inches.

A new postoffice called Flandrum has been established on the north shore of the lake, and it is said that this place will be the junction point on the

main line of the Soo Railroad, for a branch from the northeast and a branch from the southeast. Whether this be true or not, the natural development of the country will make Flandrum a busy little place for the next few years.

Preparations have been made for putting in thousands of acres of crops in 1907, many traction engines for plowing having already been brought in. If dry land farming proves the success in Valley county that is anticipated, it will be changed from almost a purely stockraising district to a farming district that will reflect great credit upon the State. While the area in cultivation is comparatively small, all the cereals are grown, the few orchards are doing well, while watermelons and muskmelons mature in abundance.

Good irrigated cultivated land is worth $50 an acre, and cultivated dry land from $20 to $40. There are no farms of either description for sale. Land is fairly productive, wheat running from 25 to 45 bushels, and oats from 40 to 80 bushels an acre. Hulless barley averages 40 bushels and alfalfa from 4 to 6 tons an acre at three cuttings, the last coming in September. Potatoes do well, H. L. Dillard raising 1,200 bushels from six acres.

Glasgow is a thriving city of about 1,000 population, with a new $35,000 city high school, and another $15,000 public school building. Twenty thousand dollars in bonds have been voted for city water works and others will soon be issued for an electric light plant. There is a local telephone system connecting many of the nearby ranches, which is being extended to Hinsdale. Glasgow is a freight division point, and has a monthly railroad payroll amounting to $42,000.

In 1905, 36,000,000 pounds of freight were shipped in, the local railroad receipts being $90,000.

There were shipped out 663 cars of beef cattle, 131 cars of sheep, 46 cars of horses, and 1,200,000 pounds of wool. The 663 cars above mentioned were only the beef cattle shipments, and do not include any of the breeding stock calves, yearlings, or two and three-year-olds. The beef shipments alone, giving each steer five feet of standing room only, would require about 12 miles of barn room for shelter. The mineral resources of the county are confined to coal and the only manufactures are brick.

The Fort Peck Indian reservation lies wholly within this county, and is about 80 miles long by 40 miles wide. The agent is C. B. Lohmiller, Poplar, Mont.

There are sub-stations of the United States land office at Culbertson, Mondak and Flandrum.

Valley county also shows a splendid increase over the valuation of 1905, being marked up $646,511. The largest item of advance is in the railroad valuation, $376,884, and the next largest is in livestock, $179,202. The latter total valuation is $1,804,339 placed upon 315,886 animals. This includes 7,909 horses at $266,829, with 15 valued at an average of $566.66 each; 48,205 cattle, $707,772; 299,289 sheep, $827,757; 241 hogs, $1,255, and 242 angora goats, $726.

There are 1,488 acres of grain land assessed at $7,440; 6,000 acres of hay

TUNNEL ON THE DITCH OF THE BILLINGS LAND AND IRRIGATION CO.

land, $30,000; 2,000 acres of fenced grazing land, and 6,000 unfenced also at the flat rate of $5 an acre. The totals are 15,488 acres at $77,440.

An unusual item is $3,000 on a steamboat; mortgages aggregate $67,772, and the total of real estate and improvements is $615,935; personal property totals $2,194,556, and the railroad valuation is $3,346,765. The classification of Valley will undoubtedly be raised in a few years.

YELLOWSTONE COUNTY.

Few localities in this or any other state offer to the settler and investor such opportunities as abound in Yellowstone County. Agriculture and irrigation are both highly developed, winter feeding of livestock is practiced on a large scale, and the manufacturing activity is truly remarkable. The area of land in active cultivation, already great, is being vastly increased by private and government irrigation works, and the population, both urban and rural, is steadily growing. If present plans are carried out, railroad facilities, already very fair, will exceed those of any locality in the State.

Yellowstone was the first county which demonstrated to Montana farmers the value of alfalfa as a wealth producer, and her records in this crop have never been excelled. Thousands of sheep are brought in to be fattened before being sent to eastern markets, together with cattle and hogs, the farmers thus realizing a higher price for alfalfa than would be the case if it were baled and sold. Experiments with corn have shown that this crop can be grown with moderate success, making a valuable addition to the farm products, which include everything that can be grown in a northern climate, including watermelons, cantaloupes and peaches.

Having achieved remarkable success in the production of alfalfa, the farmers are now turning their attention to sugar beets, supplying the larger part of the raw material for the operation of the new $1,250,000 sugar refinery at Billings.

Practically without mineral resources except a good quality of building sandstone, Yellowstone County has devoted her attention principally to agriculture, livestock and manufacturing. The result is a progressive, enterprising spirit which animates the entire population of 10,000 people, whose activities have commanded the attention of both settlers and capitalists, and made Yellowstone one of the most widely advertised sections of the State.

Approximately 150,000 acres are under irrigating ditches at the present time, and this area will be very greatly extended in 1907. Favorable reports by Government engineers have been made on 350,000 acres of land for irrigation projects within a radius of 50 miles of Billings, and it is claimed by some that there are possibilities that 1,000,000 acres may ultimately be reclaimed for agricultural use. No dry land farming is now practiced in the county, and so far as can be learned there is no disposition to encourage this style of farming. The slope of the valley is such that the land is easily susceptible to irrigation, the fall being only nine feet to the mile for a distance of thirty-five miles west of Billings, while from Billings to Forsyth, it is only seven feet to a mile.

The advent of the beet sugar factory has caused a spectacular rise in land values, although many good tracts are still obtainable at reasonable figures. Present prices range from $35 to $125 an acre, though small tracts of ten or more acres, principally used as truck farms, have sold from $100 to $300 an acre. Prices of both farm and city property have doubled during the last two years, and in some instances the advance has been even greater.

No small part of this vast increase may be attributed to the enterprise of the Billings Land & Irrigation Company, whose canal has brought from 16,000 to 18,000 acres under water and cultivation. This Company has sold 10,000 acres of its land at from $35 an acre up.

An instance of farm achievement and increase in value which might be duplicated again and again in this county is found in a transaction where 120 acres were purchased in the fall of 1904 from the above company at $35 an acre, the tract lying three and one-half miles from Billings. The cost of breaking, plowing, and seeding with oats was $5 an acre. Harvesting cost $1 an acre, and threshing cost $175. The yield was 3,500 bushels of oats in 1905, the first year the land was tilled, 12,000 pounds of which sold for $1.20 cwt., and the balance of the crop was sold for $1.40 cwt., loose in the bin. The place was sold in March, 1906, for $75 an acre.

Wheat throughout the county will average about 25 bushels an acre, and oats about 50 bushels. Some phenominal records have been made in the county, as the figures will show. One acre of potatoes, 1,213 bushels. Sixty acres of wheat, 51 bushels an acre. One acre of wheat, 84 bushels. A small field of alfalfa averaged 7 3-4 tons an acre, and timothy has cut 5 tons an acre.

One farm near Billings, of 160 acres, produced in a single season 105 acres of native pasture, 100 tons of alfalfa, 240 bushels of oats from 5 acres, 41 bushels of wheat an acre, and 150 bushels of corn, besides $1,500 in fruits and vegetables as follows: 2,100 quarts strawberries, 1,200 quarts raspberries, 1,900 quarts blackberries, 300 dozen celery, 8,000 cabbages, besides potatoes, carrots, tomatoes, melons and other vegetables. In addition this farm wintered 3,000 sheep at 50 cents a head.

A peculiar anomaly to be found nowhere else in the State exists in Yellowstone County. This consists in the fact that while thousands of dollars are being expended to bring water to certain lands, other thousands are being expended to drain water from large sections of low land, which is too wet to be cultivated. The first enterprise of this character to be undertaken in Montana is known as the Arnold drain, five miles west of Billings, and two miles of the drain has been completed. Pipes three feet in diameter are placed ten feet underground and from 300 to 500 feet apart. Aside from the laterals this work will cost $20,000. Forty-five men are employed. Three other drainage districts have been laid out, one each at Canon Creek, Laurel, and Park City. The four projects will reclaim 10,000 acres.

The only irrigation enterprise of consequence undertaken within a year is that of the Cove Ditch Company. Work was started late in 1905 on a canal that will take water out of Yellowstone River at Rapjds, and cover 10,000

acres of fine bench lands skirting the Yellowstone Valley at a cost of $100,000. The length of the ditch is 53 miles.

The principal towns are Billings, the county seat, population 7,300; Columbus, 600; Laurel and Park City, 300 each. Billings is a wide awake, thriving city, with fine streets, substantial business and public buildings, good schools and churches, and a fine library.

The chief manufacturing industry is, of course, the sugar refinery, elsewhere described in detail, but besides this there is a $150,000 brewery, a packing plant costing $50,000, a $50,000 flour mill which produced 15,094 barrels of flour in 1904, and 22,270 barrels in 1905. Two brick yards, representing an investment of $26,000, a cement block factory, a broom factory, and several cigar factories The Billings creamery, burned in July, 1906, is being rebuilt, and will no doubt continue its remarkably successful business. In addition there are three electric power plants, generating in the aggregate 5,000 horsepower with water. This is perhaps near the limit of power available in the county.

As in the sugar refinery, so Billings was in the lead with a packing plant, the property of P. B. Morrill & Co. This is referred to in detail at another page.

Thousands of sheep are brought into Yellowstone County to be fattened on alfalfa. Sometimes this is augmented with a grain ration, but splendid results are shown with alfalfa alone. The great feeders of the State are the Rea Brothers of Billings and St. Paul. In the winter of 1905-1906 this firm put 100,000 head of sheep out among the farmers, weighing everything in at $2.75 per cwt. These sheep showed an average gain of 20 pounds in 90 days, and were weighed out at an advance of 75 cents per cwt., or $3.50. They were fed an average of four pounds of alfalfa a day. Where grain was fed, one-fourth pound a day, the price of the sheep was advanced to $4.00 per cwt. in place of $3.50.

On the straight hay basis Mr. Rae figures that farmers receive from $8 to $10 a ton for their alfalfa, and 5 tons an acre can easily be raised. He also states that he has frequently averaged better than a gain of twenty pounds per head on straight alfalfa ration.

At the St. Paul stock feeding yards the charge for shed room for 2,000 sheep is $125 a year, $62.50 per thousand sheep. The average price for wheat screenings is $8 a ton, though this feed has been made the subject of a millers' combine in recent years and has sold much higher. Each sheep will eat on an average four pounds of screenings and one-fourth pound of hay for three months. The price of hay at the yards is about $7 a ton.

Yellowstone County shows the largest increase in valuation of any county in the State with the single exception of Silver Bow, the total having risen from $8,591,806 in 1905 to $11,550,125 in 1906, making it one of three fourth-class counties.

Eight hundred and ninety-five thousand, three hundred and eighty-two acres of land are assessed at a total valuation of $3,204,737. There are 1,000 acres assessed at $100 an acre, a record not touched in any other county; 15,-

000 acres of first class grain land, $750,000; 8,000 acres second class land, $280,000; 15,000 acres hay land, first class, $750,000; 569,166 acres grazing land, fenced and unfenced, $511,558; and 267,216 acres of railroad land at $113,179, about 42 cents an acre.

Mortgages upon $200,000 worth of property are taxed at $13,823, while the total valuation of real estate and improvements is $3,462,104. Two ditches are taxed at $26,100; franchises, $90,000; insurance premiums, $39,401; bank stock, $110,890; credits, notes, deposits and money on hand, $45,350; machinery, $64,805; goods and merchandise, $503,183.

The total livestock assessment is $1,653,961 on 369,374 animals. These figures include 6,513 horses, $238,550; 24,252 cattle, $401,856; 338,267 sheep, $1,010,901; 342 hogs, $1,654.

HEARST PUBLIC LIBRARY, ANACONDA.

LIBRARIES.

(Courtesy Mrs. Laura E. Howey, Librarian State Historical Society.)

Since the report of 1901-02 there has been a steady increase in the number of public libraries in the State. At that time there were but 16 reported; now there are 24 including the State libraries. Several of the smaller libraries, as Big Timber, Havre, Sheridan, Stevensville, Twin Bridges and Virginia City are supported entirely by donations, fines, membership fees and proceeds from entertainments, the work being done by volunteer librarians.

Miss Katharine B. Judson, who is a graduate of the New York Library School, and who for the past year and a half has been in charge of the library at Kalispell, resigned recently to accept a position in the new Carnegie library at Seattle. Miss Janet H. Nunn, also a graduate of the New York Library School, has been chosen as her successor.

ANACONDA.

The Hearst Free Library was established in March, 1895, by Mrs. Phoebe A. Hearst as a memorial to her husband, Senator Hearst of California, who was intimately connected with the early history of Anaconda. The library was opened in temporary quarters with about 2,000 volumes. In 1898 the handsome structure which the library now occupies was completed by Mrs. Hearst and was immediately made available for the purposes of the institution. Few libraries in the west have handsomer homes than this. Its exterior is classic in design, admirably adapted to the purposes for which it was built. Gray granite and pressed brick are the materials employed. The interior is finished in quarter-sawed oak, the walls and ceilings are harmoniously colored, and all the rooms are well lighted. The building is spacious and well arranged. On the first floor are the circulating, the children's and the reference departments. The second floor is given up to meeting and club rooms. During the year the library has been re-catalogued and re-classified, the card system taking the place of that formerly in use. A children's department has also been established and has been a pronounced success.

Until 1904 Mrs. Hearst conducted the library for the benefit of the city. In that year the building, grounds and library itself were presented to the city of Anaconda by Mrs. Hearst and the institution is now under municipal management and control, according to the provisions of the public library law of the State.

BUTTE.

The following account of the Butte library is found in the trustees' report of March 31, 1906.

"The library was open until the 23d of September, when it was partially destroyed by a fire which caught in the roof from sparks and heat from the burning of the Symons block and other buildings on Park street, on the morning of Sunday, Sept. 12, 1905. The upper part of the building, consisting of an auditorium and adjoining rooms, was burned entirely, but the walls were apparently but little damaged. The ceiling of the main library room was burned through in many places, and while no books were burned nearly all were thoroughly soaked by hot water that came down from the fire above.

"The insurance on the books, furniture, fixtures, and pictures amounted to $40,000. The loss to be paid by the insurance companies was fixed at $27,495.

"Immediately the librarian and assistants began clearing away the main floor, cleaning the books and carrying them down to the basement room, where carpenters were busy putting up wooden racks to receive them. This kept them hard at work until Oct. 23, 1905, on which date the rooms were opened for business. Since that time the library has been opened daily with the exception of Sundays and holidays for the issuance of books."

In October, 1906, the first floor of the remodeled building was completed and the basement floor closed. The style of the building has been changed from Gothic to Grecian. Besides being thoroughly fireproof, the building has been improved in many ways. The first floor is devoted entirely to library purposes; the walls are tinted a pleasing shade of green, and the wainscoting, four and a half feet in height, is Tuscan red. The ceiling is adorned with heavy paneling in white and gold.

GREAT FALLS.

Great Falls in indebted to the late Mrs. Paris Gibson for the first attempts to establish a library who gave not only much time and effort in this direction but donated a large number of books, which formed the nucleus of the present library.

On June 28, 1889, the Valeria Art and Library Association was formed with a capital of $10,000, divided into shares of $5 each. A small fee was charged for the loan of books with a view of making the library self-supporting. During the following year two very desirable lots were donated by the Townsite Company on Third street and Second Avenue North, only two blocks from the business center. On the rear of these lots a neat little library was erected, the corner being reserved for the permanent building.

For more than two years this private corporation owned and managed the library, but the income from the books was not sufficient to cover current expenses and in May, 1892, the city authorities assumed the responsibility, and the land, building and books were conveyed in legal form to the city of Great Falls. Since that time a yearly appropriation has been made by the city council, which at present is $5,000. In 1901, when it became apparent that the small building would soon be entirely inadequate for its needs, Mr. Carnegie was asked to consider Great Falls' claims for a library. In response Mr. Carnegie a few weeks later generously gave $30,000 and afterwards an additional $1,700 for a library building, subject to his usual rules.

The new library is 70x90 feet in extreme dimensions, the main portion being rectangular, the rear semi-circular, surmounted by a dome about 40 feet in height. The materials are cream pressed brick, with stone trimmings. The building fronts west on Third street, with one side facing Second Avenue North. The main entrance is on Third street, and another on Second avenue opens into the vestibule, which leads into an assembly hall with a seating capacity for about 300 persons. The interior of the building is finished in dark oak; tinting shades from light cream in the top of the dome to a a deep cream ceiling. The walls, pillars and steel stacks are dark green.

Before moving into the new building the library was entirely reorganized. The books were classified under the decimal classification, and a complete dictionary catalogue made. On the 15th of October, 1903, the new library was opened, the name having been changed to the Great Falls Public Library.

MILES CITY.

The Miles City Carnegie Library represents the philanthropy of Andrew Carnegie, enlivened by the progressive spirit of the people of Miles City. When Mr. Carnegie began his library gifts Miles City was an early aspirant for recognition. For ten or a dozen years previously there had been fitful attempts at establishing something in the way of a reading room, but well-intended as these efforts were they failed. Meanwhile the privileges that were not afforded the residents by private libraries were supplied by a "book club," formed by a score or more of ladies who by mutual contribution purchased each year a sufficient number of new books to furnish reading to the club for the year. This plan answered all the purposes of a library for the few concerned, but as it dealt in new books only and was limited in its services, the masses were still unsupplied.

The Carnegie gift of $10,000 became operative in October, 1901, by the acceptance of the city council and its pledges to furnish a maintenance fund of not less than $1,000 per annum. A fine location was secured by private contributions and the building was completed early in the year 1903 and on March 25, 1903, was formally dedicated. The library now contains more than 1,700 volumes of standard works, embracing all varieties from science to fiction, while nearly every reputable periodical, monthly or weekly, is found upon the reading room tables. For the major portion of this growth the library is indebted to the earnest labors of the Ladies' Auxiliary, a volunteer association of women who undertook by means of entertainments of various kinds to raise funds with which to purchase books. In the past two years these ladies have gathered and disbursed for books, magazines and newspapers the sum of $955. The present status of the library is very gratifying, indeed.

Statistics of Institutional and Office Libraries.

NAME OF LIBRARY	Librarian	Library Founded	No. Bound Volumes in Library	No. Volumes Added in Year	No. Pamphlets in Library	No. Newspapers, Magazines, etc., Taken	Hours Open	Expended for Books	For Salaries	Total Expenditures
Boulder—Deaf and Blind School Library	A. T. Schoolfield		700	100			Tues. and Fri. 6:30 P. M.	$25 00		$25 00
Bozeman—Library State College of Agriculture	Mary K. Winter	1893	8,500	467		170	8:30 A. M.—4:30 P. M.	$1,200 00	$636	1,836 00
Butte—Montana Society of Engineers	Clinton H. Moore		250	25	100	15				
Deer Lodge—Prison Libbrary	Prisoner	1902	4,000				2 books per week to pris.			
Dillon State Normal College Library	H. H. Swain	1897	5,350	548		93		531	180	711 00
Helena Diocesan (Catholic) Library	Victor Day	1884	1,274		708	12				
Fire Department Library	Thos. J. Kane	1876	195	8	25	6	All the time	8 00		8 00
Masonic Library	Cornelius Hedges	1872	850	50	2,000	20	10	60 00		60 00
State Supt. Pub. Inst. (Office Library)			1,056				9 A. M.- 5 P. M.			
U. S. Weather Bureau Library	Section Director		275	10	200	20	9 A. M. 4 P. M.			
Missoula—State University Library	M. G. Buckhouse	1895	17,500	800	6,998	157	8:30 A. M.—4:30 P. M.			
Total			39,900	2,008	9,031	493		$1,824 00	$816	$2,640 00

KOHRS PUBLIC LIBRARY, DEER LODGE.

Statistics of Public Libraries.

NAME OF LIBRARY	Librarian	Library Founded	No. Volumes Bound in Library	No. Volumes Added in Year	No. Pamphlets in Library	No. Newspapers, Magazines, etc., Taken	Hours Open
Anaconda-Hearst Free Library	Elizabeth L. Thompson	Mar. 25, 1895	8,063	1,000	.....	85	10 A. M.—9 P. M.
Big Timber Public Library	Mrs. W. A. Moore	Nov. .., 1904	480	130	.....	.....	2-5; 7-8 P. M. Tues. & Sat.
Billings (Parmly) Memorial Library	Mabel Collins	..., 1901	5,100	.....	2,125	150	9 A. M.—9 P. M. (a)
Bozeman Carnegie Library	Elizabeth McCord	..., 1880	7,919	674	1,060	64	Daily, 1:30—5 P. M. (b)
Butte Public Library	Granville Stuart	Nov. 8, 1890	40,891	2,606	.....	239	9 A. M.—9 P. M.
Deer Lodge-Kohrs Memorial Library	Thos. W. Catlin	Nov. .., 1901	3,950	200	.....	61	3 to 6—7 to 9 P. M.
Dillon Public Library	M. Lyle Innes	..., 1885	3,825	338	500	53	18 hrs. per week
East Helena Public Library	J. G. Partridge	..., 1900	1,000	350	250	.....	Saturday P. M.
Glasgow Public Library	Elizabeth Wofford	Nov. 23, 1904	400	200	.....	16	2-5:30; 7-10 P.M.
Great Falls Public Library	Jennie M. Conner	..., 1892	8,821	754	.....	64	9 A. M.—9 P. M.
Hamilton Public Library	Harriet D. Mitchell	May .., 1903	1,000	142	.....	49	7-9:30 P. M. (c)
Havre Public Library	Volunteer	Dec. .., 1905	1,000	.....	.....	24	2-6; 7-9:30 P. M.
Helena Public Library	Marguerite Bowden	..., 1868	41,145	1,955	17,211	478	8:30 A. M. 9 P. M.
Kalispell Carnegie Public Library	Janet H. Nunn	..., 1897	3,000	300	.....	38	2-6; 7-9 P. M.
Lewistown-Carnegie Public Library	Archie Farnum	May 13, 1901	2,150	.....	.....	.....	2-5:30; 7-9 P. M.
Livingston Public Library	Eleanor P. Hamilton	..., 1902	1,700	300	.....	36	6 hrs. daily
Miles City-Carnegie Library	Laura Zook	Mar. 25, 1903	3,527	201	350	54	6 hrs. daily
Missoula Public Library	Grace M. Stoddard	Apr. .., 1894	8,496	880	.....	62	2-5:30; 7-9 P. M.
Montana State Hist. & Misc. Library	Laura E. Howey	Dec. 28, 1864	25,000	1,134	5,000	164	9 A. M.—5 P. M.
Montana State Law Library	A. K. Barbour	.....	16,000	1,075	.....	19	9A. M.-5 P. M.
Sheridan Public Library	.....	.....	.....	.....	.....	.....	.....
Stevensville-Free Reading Room Society	Volunteer	Nov. 13, 1903	564	.....	.....	38	7:30 to 9 P. M. (d)
Twin Bridges Public Library	Mrs. J. G. Haid	Apr. .., 1897	1,858	57	500	6	3 hrs. per week
Virginia City Public Library	Volunteer	Oct. 11, 1902	1,488	296	.....	21	3-5 P. M. Sat. (e)
Total	.....	.....	187,367	12,892	26,996	1,721	.....

(a) Sundays 2-6 P. M. (b) Sundays, 7-9 P. M. (c) Mon., Wed., Sat. 2-5 P. M. (e) Mon., Wed., Sat. 7-9 P. M.

Statistics of Public Libraries—Concluded

NAME OF LIBRARY	Building Owned?	Erected	Value of Building	Fund	How Supported	Rate of Tax	Total Amount Received	Expended for Books, Periodicals, Binding, etc.	For Salaries	Maintenance, etc.	Total Expenditures
Anaconda-Hearst Free Library	Yes	1895	$55,000	Built by Mrs. P. A. Hearst	City			$1,000 00	$3,360 00		$4,360 00
Big Timber Public Library	No				Donations, fines, etc.		$410 00	300 00		$80 00	380 00
Billings (Parmly) Memorial Library	Yes	1901	25,000	Gift of Fredk. Billings, Jr.	Taxation	1 Mil		700 00	1,480 00	587 00	2,767 00
Bozeman Public Library	Yes	1903	15,000		Taxation	½ Mill	2,700 00	763 00	1,329 00	245 00	2,337 00
Butte Public Library	Yes	1895			Taxation	1 Mill	6,210 12	9,512 45	4,446 12		20,168 69
Deer Lodge—Kohrs Memorial Library	Yes	1902	20,000	Gift of Conrad Kohrs	Taxation	1 Mill		*	500 00	200 00	700 00
Dillon Public Library	Yes	1902	7,500	Gift of Andrew Carnegie	Taxation	1 Mill	1,100 00	710 00	390 00		1,100 00
East Helena Public Library	No				Contributions					140 00	140 00
Glasgow Public Library	No				Taxation	2 Mills	500 00	60 00	40 00	400 00	500 00
Great Falls Public Library	Yes	1903	5,000	Andrew Carnegie	Taxation			601 79	3,300 00	1,098 21	5,000 00
Hamilton Public Library	No				Taxation	1 Mill	475 00	135 00	120 00	220 60	475 00
Havre Public Library	No				City and Donations					** 480 00	480 00
Helena Public Library	City	1892	10,000		Taxation	¾ Mill	8,431 16	2,792 68	5,589 75		8,382 43
Kalispell-Carnegie Public Library	Yes	1903-4	10,000	Carnegie	Taxation	1 Mill	2,000 00	400 00	900 00		1,300 00
Lewistown-Carnegie Public Library	Yes	1905	15,000	Carnegie	Taxation	1 Mill	1,481 83	600 00	780 00		1,380 00
Livingston Public Library	Yes	1904	10,000	Carnegie	Taxation	1 Mill		500 00	1,020 00	180 00	1,700 00
Miles City Carnegie Library	Yes	1902	11,000	Carnegie	Taxation		1,000 00		900 00	100 00	1,000 00
Missoula Public Library	Yes	1904	13,000	Carnegie	Taxation	1 Mill	3,250 00	895 00	1,510 00	856 00	3,261 00
Montana State Hist. & Misc. Library	(*)				State		4,800 00	773 71	2,786 00	1,234 26	4,793 97
Montana State Law Library	(*)				State		3,340 25	1,419 05	1,500 00	785 78	3,704 83
Sheridan Public Library											
Stevensville-Free Reading Room Society	No				Donations, etc.						
Twin Bridges Public Library	No				Donations, etc.		73 00	32 00		130	3,330
Virginia City Public Library	No				Donations, etc.			109 45		13,770	247 15
Total			$196,500					18,001 80	35,017 20	11,191 37	64,210 37

* $6,000 spent for books since library opened. (*) Located in State Capitol. ** Approximately.

DIRECTORY OF TERRITORIAL OFFICERS IN MONTANA TO 1889.

Persons who were appointed or commissioned and did not qualify are omitted.

Governors

	Term of office	
Sidney Edgerton*	June 22, 1864	July 12, 1866
Green Clay Smith*	July 13, 1866	Apr. 8, 1869
James M. Ashley*	Apr. 9, 1869	July 12, 1870
Benjamin F. Potts*	July 13, 1870	Jan. 14, 1883
J. Schuyler Crosby	Jan. 15, 1883	Dec. 15, 1884
B. Platt Carpenter	Dec. 16, 1884	July 13, 1885
Samuel T. Hauser	July 14, 1885	Feb. 7, 1887
Preston H. Leslie*	Feb. 8, 1887	Apr. 8, 1889
Benjamin F. White	Apr. 9, 1889	Nov. 8, 1889

* Deceased.

SUPREME COURT

Chief Justices

	Term of office	
Hezekiah L. Hosmer	June 30, 1864	July 17, 1868
Henry L. Warren*	July 18, 1868	Mar. 16, 1871
Decius S. Wade*	Mar. 17, 1871	May 1, 1887
N. W. McConnell	May 2, 1887	Mar. 25, 1889
Henry N Blake	Mar. 26, 1889	Nov. 8, 1889

* Deceased.

Associate Justices

	Term of office	
L. P. Williston	June 22, 1864	July 17, 1868
Lyman E. Munson	Mar. 11, 1865	Apr. 4, 1869
Hiram Knowles	July 18, 1868	June 30, 1879
George G. Symes*	Apr. 5, 1869	Jan. 26, 1871
John L. Murphy	Jan. 27, 1871	Sept. 20, 1872
Francis G. Service*	Sept. 21, 1872	July 29, 1875
Henry N. Blake	July 30, 1875	Mar. 1, 1880
William J. Galbraith	July 1, 1879	Jan. 27, 1888
Everton J. Conger	Mar. 2, 1880	Feb. 18, 1884
John Coburn	Feb. 19, 1884	Dec. 30, 1885
Charles R. Pollard	Dec. 31, 1885	Aug. 5, 1886
James H. McLeary	Aug. 6, 1886	Apr. 1, 1888
Thomas C. Bach	Aug. 9, 1886	Nov. 8, 1889
Stephen DeWolfe*	Jan. 28, 1888	Nov. 8, 1889
Moses J. Liddell*	Apr. 2, 1888	Nov. 8, 1889

* Deceased.

United States Attorneys

	Term of office	
Edward B. Nealley*	June 22, 1864	Apr. 19, 1867
Moses Veale	Apr. 20, 1867	July 10, 1868
Alexander E. Mayhew	July 11, 1868	Apr. 21, 1869
Henry N. Blake	Apr. 22, 1869	Mar. 2, 1871
Cornelius Hedges	Mar. 3, 1871	May 16, 1872
Merritt C. Page*	May 17, 1872	May** 13, 1877
Robert S. Anderson	Nov. 5, 1877	July 15, 1879
John W. Andrews, Jr.*	July 16, 1879	May*** 8, 1880
James L. Dryden	June 22, 1880	Nov. 10, 1881
Frank M. Eastman	Nov. 11, 1881	Mar. 1, 1883
William H. DeWitt*	Mar. 2, 1883	Sept. 6, 1885
Robert B. Smith	Sept. 6, 1885	Mar. 27, 1889
Elbert D. Weed	Mar. 28, 1889	Mar. 11, 1894

* Deceased.
** Died May 13, 1877. ***Died May 8, 1880.

Attorneys-General

	Term of office	
William E. Cullen	Dec. 31, 1887	Mar. 24, 1888
John B. Clayberg	Mar. 25, 1889	Nov. 8, 1889

United States Marshals

	Term of office	
George M. Pinney	Feb. 20, 1865	Mar. 17, 1867
Neil Howie*	Mar. 18, 1867	May 14, 1869
William F. Wheeler*	May 15, 1869	Apr. 8, 1878
Alexander C. Botkin*	Apr. 9, 1878	June 30, 1885
Robert S. Kelley*	July 1, 1885	Mar. 31, 1889
George W. Irvin	Apr. 1, 1889	June 30, 1890

* Deceased. ** Died May 1, 1898.

Territorial Treasurers

	Term of office	
John J. Hull*	Feb. 8, 1865	Mar. 19, 1866
John S. Rockfellow*	Mar. 20, 1866	Dec. 11, 1867
William G. Barkley*	Dec. 12, 1867	July 19, 1871
Richard O. Hickman*	July 20, 1871	June 30, 1875
D. H. Weston	July 1, 1875	Mar. 5, 1887
William G. Preuitt	Mar. 6, 1887	Nov. 8, 1889

* Deceased.

Territorial Auditors

	Term of office	
John S. Lott	Feb. 8, 1865	Mar. 19, 1866
John H. Ming*	Mar. 20, 1866	Dec. 5, 1867
William H. Rodgers*	Dec. 6, 1867	Feb. 11, 1876
George Callaway	Feb. 12, 1874	Nov. 30, 1874
Solomon Star	Dec. 1, 1874	Jan. 4, 1876
D. H. Cuthbert*	Jan. 5, 1876	Feb. 21, 1879
Joseph P. Woolman	Feb. 22, 1879	Mar. 4, 1887
James Sullivan*	Mar. 5, 1887	Nov. 8, 1889

* Deceased.

Secretarys of the Territory

	Term of office	
Thomas F. Meagher*	Aug. 4, 1865	Mar. 27, 1867
James Tufts*	Mar. 28, 1867	Apr. 19, 1869
Wiley S. Scribner*	Apr. 20, 1869	July 18, 1870
Add H. Sanders	July 19, 1870	Jan. 20, 1871
James E. Callaway*	Jan. 21, 1871	May 9, 1877
James H. Mills*	May 10, 1877	May 31, 1882
Isaac D. McCutcheon	June 1, 1882	Apr. 20, 1884
John S. Tooker	Apr. 21, 1884	Oct. 22, 1885
William B. Webb	Oct. 23, 1885	Apr. 14, 1889
L. A. Walker	Apr. 15, 1889	Nov. 8, 1889

* Deceased.

Superintendents of Public Instruction

	Term of office	
A. H. Barret	Sept. 8, 1866	Mar. 3, 1867
A. M. S. Carpenter	Mar. 4, 1867	Jan. 4, 1868
Thomas F. Campbell	Feb. 1, 1868	July 15, 1869
Cornelius Hedges	Jan. 27, 1872	Jan. 15, 1878
Clark Wright	Jan. 16, 1878	Feb. 18, 1879
W. Egbert Smith*	Feb. 19, 1879	Feb. 22, 1881
R. H. Howey	Feb. 23, 1881	Feb. 21, 1883
Cornelius Hedges	Feb. 22, 1883	Mar. 17, 1885
William W. Wylie	Mar. 18, 1885	Mar. 11, 1887
Arthur C. Logan	Mar. 12, 1887	Nov. 8, 1889

* Deceased.

Delegates in Congress

	Term of office	
Samuel McLean*	Oct. 24, 1864 to	Mar. 4, 1867
James M. Cavanaugh*	Mar. 4, 1867 to	Mar. 4, 1871
William H. Clagett*	Mar. 4, 1871 to	Mar. 4, 1873
Martin Maginnis	Mar. 4, 1873 to	Mar. 4, 1885
Joseph K. Toole	Mar. 4, 1885 to	Mar. 4, 1889
Thomas H. Carter	Mar. 4, 1889 to	Nov. 8, 1889

* Deceased.

DIRECTORY OF OFFICERS IN MONTANA SINCE STATEHOOD.

Governors

NAME.	Elected	Beginning of Term	End of Term
Joseph K. Toole	Oct. 1, 1889	Nov. 8, 1889	Jan. 2, 1893
John E. Rickards*	Nov. 8, 1892	Jan. 2, 1893	Jan. 4, 1897
Robert B. Smith	Nov. 3, 1896	Jan. 4, 1897	Jan. 7, 1901
Joseph K. Toole	Nov. 6, 1900	Jan. 7, 1901	Jan. 2, 1905
Joseph K. Toole	Nov. 8, 1904	Jan. 2, 1905	Jan. 5, 1909

* Remove to California.

LIEUTENANT GOVERNORS.

NAME.	Elected	Beginning of Term	End of Term
John E. Rickards	Oct. 1, 1889	Nov. 8, 1889	Jan. 2, 1893
Alexander C. Botkin*	Nov. 8, 1892	Jan. 2, 1893	Jan. 4, 1898
A. E. Spriggs	Nov. 3, 1896	Jan. 4, 1897	Jan. 7, 1901
Frank G. Higgins*	Nov. 6, 1900	Jan. 7, 1901	Jan. 2, 1905
Edwin Norris	Nov. 8, 1904	Jan. 2, 1905	Jan. 5, 1909

* Deceased.

SECRETARIES OF STATE.

NAME.	Elected	Beginning of Term	End of Term
Louis Rotwitt	Oct. 1, 1889	Nov. 8, 1889	Jan. 2, 1893
Louis Rotwitt	Nov. 8, 1892	Jan. 2, 1893	Jan. 4, 1897
T. S. Hogan	Nov. 3, 1896	Jan. 4, 1897	Jan. 7, 1901
George M. Hays	Nov. 6, 1900	Jan. 7, 1901	Jan. 2, 1905
A. N. Yoder	Nov. 8, 1904	Jan. 2, 1905	Jan. 5, 1909

ATTORNEYS GENERAL.

NAME.	Elected	Beginning of Term	End of Term
Henri J. Haskell	Oct. 1, 1889	Nov. 8, 1889	Jan. 2, 1893
Henri J. Haskell	Nov. 8, 1892	Jan. 2, 1893	Jan. 4, 1897
C. B. Nolan	Nov. 3, 1896	Jan. 4, 1897	Jan. 7, 1901
James Donovan	Nov. 6, 1900	Jan. 7, 1901	Jan. 2, 1905
Albert J. Galen	Nov. 8, 1904	Jan. 2, 1905	Jan. 5, 1909

STATE TREASURERS.

NAME.	Elected	Beginning of Term	End of Term
R. O. Hickman*	Oct. 1, 1889	Nov. 8, 1889	Jan. 2, 1893
Frederick W. Wright**	Nov. 8, 1892	Jan. 2, 1893	Jan. 4, 1897
T. E. Collins	Nov. 3, 1896	Jan. 4, 1897	Jan. 7, 1901
A. H. Barret	Nov. 6, 1900	Jan. 7, 1901	Jan. 2, 1905
J. H. Rice	Nov. 8, 1904	Jan. 2, 1905	Jan. 5, 1909

* Deceased.
** Removed to Alaska.

STATE AUDITORS.

NAME.	Elected	Beginning of Term	End of Term
E. A. Kenney**	Oct. 1, 1889	Nov. 8, 1889	Jan. 2, 1893
A. B. Cook	Nov. 8, 1892	Jan. 2, 1893	Jan. 3, 1897
T. W. Poindexter*	Nov. 3, 1896	Jan. 4, 1897	Jan. 7, 1901
J. H. Calderhead	Nov. 6, 1900	Jan. 7, 1901	Jan. 2, 1905
Harry Cunningham	Nov. 8, 1904	Jan. 2, 1905	Jan. 5, 1909

* Deceased.
** Removed to Washington.

SUPERINTENDENTS OF PUBLIC INSTRUCTION.

NAME.	Elected	Beginning of Term	End of Term
John Gannon	Oct. 1, 1889	Nov. 8, 1889	Jan. 2, 1893
Eugene A. Steere	Nov. 8, 1892	Jan. 2, 1893	Jan. 4, 1897
E. A. Carleton	Nov. 3, 1896	Jan. 4, 1897	Jan. 7, 1901
W. W. Welch*	Nov. 6, 1900	Jan. 7, 1901	Jan. 2, 1905
W. E. Harmon	Nov. 8, 1904	Jan. 2, 1905	Jan. 5, 1909

* Removed to Mississippi.

CHIEF JUSTICES.

NAME.	Elected	Beginning of Term	End of Term
Henry N. Blake	Oct. 1, 1889	Nov. 8, 1889	Jan. 2, 1893
W. Y. Pemberton	Nov. 8, 1892	Jan. 2, 1893	Jan. 2, 1899
Theodore Brantly	Nov. 8, 1898	Jan. 2, 1899	Jan. 2, 1905
Theodore Brantly	Nov. 8, 1904	Jan. 2, 1905	Jan. 2, 1911

ASSOCIATE JUSTICES.

NAME.	Elected	Beginning of Term	End of Term
Edgar N. Harwood	Oct. 1, 1889	Nov. 8, 1889	Jan. 7, 1895
William DeWitt*	Oct. 1, 1889	Nov. 8, 1889	Jan. 4, 1897
William H. Hunt**	Nov. 6, 1894	Jan. 7, 1895	June 4, 1900
Horace R. Buck*	Nov. 3, 1896	Jan. 4, 1897	Dec. 6, 1897
W. T. Pigott***	Dec. 21, 1897	Dec. 24, 1897	Jan. 2, 1889
W. T. Pigott	Nov. 8, 1898	Jan. 2, 1899	Jan. 5, 1903
R. Lee Word****	June 4, 1900	June 4, 1900	Jan. 7, 1901
Geo. R. Milburn	Nov. 6, 1900	Jan. 7, 1901	Jan. 7, 1907
W. L. Holloway	Nov. 4, 1902	Jan. 5, 1903	Jan. 4, 1909

* Deceased.
** Resigned June 4, 1900, to take office of Secretary of Porto Rico.
*** Appointed to fill vacancy caused by death of Justice Buck.
**** Appointed to fill vacancy caused by resignation of Justice Hunt.

CLERKS OF SUPREME COURT.

NAME	Elected	Beginning of Term	End of Term
William J. Kennedy	Oct. 1, 1889	Nov. 8, 1889	Jan. 2, 1893
Benjamin Webster	Nov. 8, 1892	Jan. 2, 1893	Jan. 2, 1899
Henry G. Rickerts	Nov. 8, 1898	Jan. 2, 1899	Jan. 2, 1905
J. T. Athey	Nov. 8, 1904	Jan. 2, 1905	Jan. 2, 1911

UNITED STATES SENATORS.

	Term of office	
Wilbur F. Sanders*	Jan. 1, 1890	Mar. 3, 1893
T. C. Power	Jan. 2, 1893	Mar. 3, 1895
Lee Mantle	Jan. 16, 1895	Mar. 3, 1899
Thomas H. Carter	Mar. 4, 1895	Mar. 3, 1901
Thomas H. Carter	Mar. 4, 1905	Mar. 3, 1911
William A. Clark	Mar. 4, 1899	Mar. 3, 1905
William A. Clark	Mar. 4, 1901	Mar. 3, 1907
Paris Gibson	Mar. 7, 1901	Mar. 3, 1905
Joseph M. Dixon	Mar. 4, 1907	Mar. 3, 1913

*Deceased.

MEMBERS OF CONGRESS.

NAME	Elected	Beginning of Term	End of Term
Thomas H. Carter	Oct. 1, 1889	Nov. 8, 1889	Mar. 4, 1891
William W. Dixon	Nov. 4, 1890	Mar. 4, 1891	Mar. 4, 1893
Charles S. Hartman	Nov. 8, 1892	Mar. 4, 1893	Mar. 4, 1895
Charles S. Hartman	Nov. 6, 1894	Mar. 4, 1895	Mar. 4, 1897
Charles S. Hartman	Nov. 3, 1896	Mar. 4, 1897	Mar. 4, 1899
A. J. Campbell	Nov. 8, 1898	Mar. 4, 1899	Mar. 4, 1901
Caldwell Edwards	Nov. 6, 1900	Mar. 4, 1901	Mar. 4, 1903
Joseph M. Dixon	Nov. 4, 1902	Mar. 4, 1903	Mar. 4, 1905
Joseph M. Dixon	Nov. 8, 1904	Mar. 4, 1905	Mar. 4, 1907

DISTRICT JUDGES

The official term of a District Judge is four years.

FIRST DISTRICT.

	Term of Office.
William H. Hunt	1889 to 1895
Horace R. Buck*	1891 to 1897
Henry N. Blake	1895 to 1896
Henry C. Smith	1897 to 1907
S. H. McIntire	1897 to 1901
J. M. Clements	1901

SECOND DISTRICT.

John J. McHatton	1889 to 1897
William Y. Pemberton	1891 to 1893
William O. Speer	1893 to 1897
John Lindsay	1897 to 1901
William Clancy	1897 to 1905
E. W. Harney	1901 to 1905
John B. McClernan	1901 to Jan. 7, 1907
George M. Bourquin	1905 to
M. Donlan	1905 to
J. J. Lynch	Jan 7, 1907 to

THIRD DISTRICT.

D. M. Durfee	1889 to 1893
Theo. Brantly	1893 to 1899
Welling Napton	1899 to 1905
George B. Winston	1905 to

FOURTH DISTRICT.

Charles S. Marshall*	1889 to 1893
Frank H. Woody	1893 to 1901
F. C. Webster	1901 to

FIFTH DISTRICT.

Thomas J. Galbraith	1889 to 1893
Frank Showers	1893 to 1897
M. H. Parker	1897 to 1905
Lew L. Callaway	1905

SIXTH DISTRICT.

Frank Henry	1889 to

SEVENTH DISTRICT.

George R. Milburn	1889 to 1897
Charles H. Loud	1897

EIGHTH DISTRICT.

Charles H. Benton	1889 to 1897
Jere B. Leslie	1897

NINTH DISTRICT.

Frank K. Armstrong	1891 to 1901
William L. Holloway	1901 to 1903
W. R. C. Stewart	1903

TENTH DISTRICT.

Dudley Du Bose	1891 to 1901
E. K. Cheadle	1901 to

ELEVENTH DISTRICT.

Charles W. Pomeroy	1895 to 1897
D. F. Smith	1897 to 1905
John E. Erickson	1905 to

TWELFTH DISTRICT.

John W. Tattan	1901 to

* Deceased.

ASSESSED

TABLE NO. 1—SHOWING THE ASSESSED VALUE OF REAL PROPERTY AFTER EQUAL

COUNTIES	Acres of Land	Value of Real Estate Other than City or Town Lots	Value of Improvements on Same	Value of Improvements on Lands Listed to Another	Value of City and Town Lots
Beaverhead	326,199	$1,063,834	$420,151	$56,434	$306,035
Broadwater	[illegible]	653,130	142,869	15,810	72,321
Carbon	153,081	1,072,373	330,325	5,625	126,305
Cascade	829,775	3,916,220	1,634,109	79,490	2,950,230
Chouteau	447,506	1,130,051	489,225	6,000	268,776
Custer	1,581,520	727,432	134,505	67,153	162,561
Dawson	752,305	365,809	20,155	79,150	186,703
Deer Lodge	112,042	307,108	2,824,382	3,450	1,051,831
Fergus	935,817	1,642,622	576,808	2,175	391,238
Flathead	623,573	2,843,403	304,445	34,470	608,604
Gallatin	679,667	3,421,962	697,358	12,075	669,392
Granite	142,655	302,454	125,795	85,607	141,179
Jefferson	215,513	504,189	371,745	1,550	198,663
Lewis and Clark	471,796	1,654,685	1,691,070	.....	3,436,505
Madison	463,160	1,066,441	635,120	81,125	153,521
Meagher	603,170	1,165,566	196,274	24,140	65,445
Missoula	823,461	2,596,058	428,913	32,850	1,146,784
Park	495,204	1,207,097	307,505	58,540	572,646
Powell	452,284	995,538	178,510	40,185	71,512
Ravalli	277,039	1,133,953	416,195	6,877	194,762
Rosebud	833,107	733,606	101,935	32,187	89,776
Silver Bow	79,832	283,955	262,875	367,400	7,725,825
Sweet Grass	570,726	1,008,118	155,450	22,765	74,239
Teton	323,221	986,011	164,055	61,729	74,356
Valley	18,645	58,958	21,899	111,273	91,822
Yellowstone	849,472	1,762,301	243,420	52,825	744,757
Total	13,255,102	$32,602,864	$12,875,093	$1,340,885	$21,575,839

(a) Miles of Line not given by Assessor.

VALUATIONS

IZATION BY THE COUNTY BOARDS OF EQUALIZATION FOR THE YEAR 1905.

Value of Improvements on Same....	Value of Mining Claims	Value of Improvements on Mining Claims.....	TELEGRAPH LINES		TELEPHONE LINES		Value of Mining Ditches.	Value of Irrigating Ditches.....	Value of Depots, Round Houses, etc.	Total Value of Real Estate and Improvements.....
			No. of Miles	Value	No. of Miles	Value				
$495,415	$28,786	$4,725	542	$12,455	280	$13,800	.....	.....	$37,015	$2,438,456
199,370	.....	.....	44	9,732	105	7,700	.....	12,400	11,825	1,035,157
329,870	.....	.....	78	5,062	360	13,760	.....	3,595	9,327	1,896,232
2,238,730	23,346	43,600	299	10,835	576	32,753	6,500	.....	92,435	11,028,248
604,365	.....	.....	1,288	29,062	118	10,633	.....	.....	90,905	2,629,017
440,890	.....	.....	72	13,070	a	3,708	.....	2,000	15,800	1,567,119
236,495	.....	.....	541	11,490	a	5,200	.....	.....	38,300	943,502
1,287,505	18,509	9,850	40	6,436	44	6,030	2,400	112,500	32,525	5,662,526
603,980	8,940	134,822	.....	.....	300	9,697	14,750	.....	3,200	3,388,282
589,245	11,270	.....	601	19,047	a	5,650	.....	2,175	96,170	4,514,479
1,294,545	.....	.....	80	16,474	192	27,566	.....	25,700	21,390	6,186,452
193,358	52,032	180,000	122	11,097	65	6,736	10,000	21,369	7,500	1,127,127
273,000	60,383	59,600	278	10,943	563	17,939	26,500	26,500	40,020	1,591,032
3,[illegible]8,370	65,345	197,020	829	21,185	634	32,945	.....	.....	74,875	11,012,000
382,605	71,642	.....	169	6,265	187	17,642	2,000	.....	10,435	2,427,796
158,305	12,127	3,810	.....	.....	220	6,770	.....	.....	5,000	1,637,438
1,309,955	10,680	15,085	1,493	49,685	590	24,696	4,185	.....	67,320	5,686,213
775,870	18,020	.....	371	10,675	117	7,914	5,000	2,395	30,000	2,995,662
208,308	35,924	30,550	1,093	23,167	320	10,425	15,462	.....	12,800	1,622,381
218,617	4,000	4,355	30	1,475	37	5,214	67,750	.....	5,550	2,058,748
173,935	.....	.....	126	16,971	125	2,500	.....	35,000	27,250	1,213,160
7,351,490	107,675	547,960	a	10,265	a	53,530	10,000	3,600	64,415	16,788,990
155,645	.....	.....	52	10,964	163	7,329	.....	.....	10,050	1,444,559
90,432	.....	.....	209	12,920	216	6,255	.....	.....	50,670	1,446,423
187,645	.....	.....	910	24,100	.....	.....	.....	.....	40,740	536,457
1,036,517	.....	.....	219	30,009	196	34,080	.....	58,950	56,065	4,018,915
$24,585,462	$528,679	$1,231,377	9,492	$373,364	5,408	$370,474	$164,547	$296,184	$951,582	$96,896,350

ASSESSED VALUATIONS

TABLE NO. 2—SHOWING THE ASSESSED VALUE OF CERTAIN CLASSES OF PRESONAL PROPERTY AFTER EQUALIZATION BY THE COUNTY BOARDS OF EQUALIZATION FOR THE YEAR 1905.

COUNTIES	Mortgages and Bonds	Express, Water, St. Railroad, Electric Light and Gas Cos.	Value of Franchises on Same	Value Watches, Jewelry and Plate	Value Household Goods and Furniture	Value Musical Instruments	Value Law, Medical and Miscellaneous Libraries	Value Goods, Wares, Mdse. and consigned Goods	Fixtures of Saloons, Stores, Offices, and Other Places	Value of Farming Utensils	Value of Machinery	Value Wagons, etc., Harness, Robes, Saddles, Blankets
Beaverhead	$125,521	$1,135	$2,000	$3,218	$40,570	$15,425	$3,325	$181,045	$23,245	$12,600	$52,235	$68,752
Broadwater	10,175	2,100	.....	807	20,095	5,370	865	52,975	6,025	4,575	41,349	28,624
Carbon	65,436	.....	.....	150	37,470	9,265	2,460	265,525	20,862	79,775	8,915	60,630
Cascade	194,395	66,651	25,000	6,542	236,402	49,940	9,749	620,314	64,535	28,930	491,059	90,145
Chouteau	152,099	11,800	.....	2,295	67,450	7,515	1,280	258,923	28,385	21,620	53,925	94,664
Custer	.....	.....	.....	3,590	60,006	11,085	7,430	162,155	27,015	23,797	.....	61,476
Dawson	103,312	.....	.....	1,910	37,910	11,195	1,475	91,906	12,935	3,943	20,456	49,759
Deer Lodge	102,841	144,165	1,000	8,340	29,010	22,420	6,060	346,220	28,365	3,785	696,020	9,097
Fergus	195,789	.....	.....	2,180	58,560	19,045	4,145	308,630	34,205	24,415	160,612	92,491
Flathead	98,255	65,500	.....	2,520	56,882	12,795	2,795	373,935	20,030	26,945	103,900	56,504
Gallatin	106,489	19,500	.....	5,823	112,558	34,200	8,960	369,000	30,032	51,613	54,375	104,770
Granite	30,407	600	.....	1,860	18,470	7,845	1,920	81,675	8,345	7,100	87,315	24,775
Jefferson	85,279	123,700	.....	3,280	56,640	16,561	2,655	135,149	15,375	8,842	383,515	39,990
Lewis and Clark	233,419	380,980	280,000	20,915	281,810	43,805	23,985	921,850	86,915	15,045	86,230	84,416
Madison	258,954	22,400	.....	3,190	20,680	15,995	1,635	185,270	11,580	15,705	68,965	72,300
Meagher	33,720	1,500	.....	1,415	22,695	5,935	1,900	109,074	6,875	10,510	18,795	35,575
Missoula	244,732	172,000	.....	5,180	100,700	29,645	8,225	407,165	42,877	12,387	117,877	61,231
Park	121,314	70,750	7,560	4,755	93,890	20,535	3,395	299,026	37,560	22,880	104,330	54,206
Powell	85,713	14,463	.....	1,195	13,475	4,065	1,400	95,750	5,430	4,471	33,952	35,344
Ravalli	192,568	44,000	.....	2,955	31,804	12,990	2,230	157,422	8,199	8,939	22,686	45,587
Rosebud	41,618	5,000	.....	1,456	29,920	6,380	1,025	93,300	12,688	5,272	10,000	33,100
Silver Bow	214,770	614,810	230,000	11,650	147,115	27,670	32,195	1,718,345	262,520	2,230	1,123,760	60,830
Sweet Grass	52,670	4,000	.....	530	20,935	6,715	1,425	86,515	6,200	11,955	12,000	23,960
Teton	81,798	.....	.....	95	23,900	4,359	1,165	125,616	8,040	20,680	.....	38,378
Valley	70,295	.....	.....	1,655	37,984	6,615	3,922	143,197	13,435	33,643	19,231	35,200
Yellowstone	22,192	80,060	.....	3,190	92,415	22,770	6,970	454,885	36,370	70,831	.....	57,185
Total	$2,923,752	$1,845,654	$559,500	$101,236	$1,749,387	$430,140	$142,591	$7,924,667	$798,023	$502,197	$3,771,455	$1,418,383

ASSESSED VALUATIONS

TABLE NO. 2 SHOWING THE ASSESSED VALUE OF CERTAIN CLASSES OF PRESONAL PROPERTY AFTER EQUALIZATION BY THE COUNTY BOARDS OF EQUALIZATION FOR THE YEAR 1905 Concluded.

COUNTIES	Value Wheat, Oats, Barley, Hay, Wool, Etc.	Value Lumber, Logs, Wood, Coal & Coke	Solvent Credits, Including Deposits in Banks	Money on hand or Special Deposit	Notes	Bank Stock	Stored Ore and Tailings	Insurance Premiums	Net Proceeds of Mines	Ice	Any Other Personal Property except Live Stock	Total Personal Property Except Live Stock
Beaverhead	$9,050	$550	$36,888	$17,547	.....	$63,999	.....	.....	.....	$925	$45,442	$703,472
Broadwater	7,561	50	37,194	.....	.....	23,080	.....	88,02[illegible]	.....	.....	1,438	250,311
Carbon	.....	.....	.....	26,285	.....	105,255	.....	19,859	78,108	.....	610	719,805
Cascade	.....	8,753	143,468	47,374	.....	334,678	.....	88,443	4,508	1,500	79,933	2,592,328
Chouteau	60	7,200	40,300	2,000	.....	241,187	.....	28,655	.....	.....	515	1,019,873
Custer	.....	460	7,500	45,178	42,189	307,273	.....	.....	.....	.....	27,751	786,905
Dawson	.....	3,000	52,557	.....	.....	.....	.....	.....	.....	.....	60	390,398
Deer Lodge	1[illegible]9.5	61,279	12,907	20,135	.....	117,017	.....	49,962	.....	450	20,910	1,704,968
Fergus	.....	.....	25,865	.....	.....	235,604	.....	31,927	445,247	1,000	2,357	1,642,062
Flathead	9,227	167,030	2,515	.....	.....	128,024	.....	33,170	.....	.....	47,433	1,207,460
Gallatin	17,918	33,360	34,160	47,755	.....	287,085	.....	30,974	.....	.....	86,382	1,374,924
Granite	7,025	1,785	3,335	3,030	.....	.....	.....	12,138	.....	190	8,134	305,940
Jefferson	325	3,808	47,269	32,121	.....	62,000	.....	21,924	.....	100	420	1,039,493
Lewis and Clark	.....	51,705	158,725	76,930	.....	740,625	(a) $9,095	138,730	33,960	.....	.....	3,749,131
Madison	750	14,215	160,600	144,610	.....	175,190	.....	19,543	10,500	.....	6,650	1,208,732
Meagher	14,064	300	12,500	4,600	.....	110,050	.....	6,456	.....	.....	750	396,714
Missoula	22,401	554,511	18,750	24,049	.....	347,312	.....	54,767	3,672	700	71,780	2,299,914
Park	2,059	.....	.....	26,812	200	115,267	.....	20,856	.....	900	252,050	1,258,285
Powell	1,500	1,635	2,100	23,480	.....	57,250	.....	7,329	.....	.....	58,760	447,312
Ravalli	12,719	247,250	11,854	7,755	.....	35,616	.....	4,769	.....	.....	7,769	857,145
Rosebud	.....	.....	13,340	15,030	.....	55,250	.....	4,885	.....	750	8,147	337,169
Silver Bow	8,310	49,520	2,512,335	59,030	.....	907,230	.....	320,965	9,956,430	.....	108,930	18,308,645
Sweet Grass	.....	2,500	10,100	.....	.....	112,985	.....	10,571	.....	.....	250	363,311
Teton	.....	2,130	12,250	200	.....	20,190	.....	12,097	.....	.....	.....	353,485
Valley	.....	1,520	11,328	.....	.....	31,265	.....	.....	.....	.....	2,585	379,290
Yellowstone	.....	.....	43,237	.....	.....	178,755	.....	41,191	.....	.....	1,155	1,111,146
Total	$123,954	$1,212,561	$3,411,057	$623,921	$42,389	$4,792,187	$9,095	$967,229	10,532,425	$6,515	$840,311	44,808,235

(a) Includes ice.

ASSESSED VALUATIONS

TABLE NO. 3—SHOWING THE ASSESSED VALUATION OF LIVE STOCK AFTER EQUALIZATION BY THE COUNTY BOARDS OF EQUALIZATION FOR THE YEAR 1905.

COUNTIES	Thoroughbred Horses		Range Horses		Common & Work Horses & Mules		Total		Thoroughbred Cattle		Beef Cattle	
	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value
Beaverhead	82	$10,610	5,597	$112,4 5	2,867	$144,105	8,546	$267,150	105	$4,455	9,174	$280,5 1
Broadwater	35	5,345	2,960	44,996	1,357	52,414	4,352	102,755	13	700	.....	.....
Carbon	.....	.....	4,030	87,073	3,033	133,480	7,063	220,553	.....	.....	.....	.....
Cascade	25	4,625	3,421	270,315	5,187	206,622	8,633	281,562	.....	.....	67	1,790
Chouteau	53	6,030	7,232	144,640	4,090	192,725	11,379	343,395	71	5,145	2,616	65,250
Custer	164	16,495	13,081	255,708	4,330	172,746	17,575	444,949	.....	.....	11,655	291,845
Dawson	76	8,440	13,670	376,575	1,427	75,570	15,173	460,585	.....	.....	18,227	448,567
Deer Lodge	134	6,785	995	11,124	1,207	48,480	2,336	66,389	.....	.....	.....	.....
Fergus	45	6,400	6,821	136,420	4,772	204,075	11,636	346,895	102	3,023	.....	.....
Flathead	17	3,550	2,459	38,965	3,035	100,810	5,511	143,325	.....	.....	.....	.....
Gallatin	144	16,155	3,367	52,162	6,234	222,595	9,745	290,912	.....	.....	1,461	42,490
Granite	23	4,825	1,790	26,852	1,223	36,690	3,029	68,367	42	(b) 2,975	.....	.....
Jefferson	16	2,650	1,437	18,130	1,588	54,550	3,341	75,330	105	5,250	1	40
Lewis and Clark	65	10,000	3,510	54,165	2,860	106,179	6,435	170,344	261	10,015	.....	.....
Madison	47	12,650	7,043	115,995	4,427	203,772	11,517	332,342	.....	.....	163	6,020
Meagher	19	2,025	3,146	62,920	1,544	(a) 61,635	4,638	126,580	115	5,750	380	9,450
Missoula	21	3,798	1,758	20,240	3,241	98,205	5,020	122,243	29	1,525	.....	.....
Park	34	9,125	3,069	56,228	2,437	113,640	5,540	178,993	.....	.....	651	20,340
Powell	16	9,295	2,385	48,510	1,479	59,385	3,960	117,190	82	3,600	622	18,310
Ravalli	69	8,040	1,996	2,600	2,945	93,950	5,010	128,590	8	400	1,426	47,240
Rosebud	.....	.....	5,467	107,669	2,265	86,282	7,731	193,951	.....	.....	.....	.....
Silver Bow	28	3,080	400	5,770	1,924	78,520	2,352	87,370	.....	.....	15	750
Sweet Grass	18	5,856	1,277	24,940	1,794	77,120	3,089	107,925	.....	.....	225	6,750
Teton	13	2,135	6,091	85,366	2,803	84,295	8,910	171,796	542	(c) 20,505	2,371	66,542
Valley	9	950	5,545	115,855	2,018	82,515	7,572	199,320	2	80	.....	.....
Yellowstone	30	5,190	3,847	81,838	2,553	111,185	6,430	198,213	.....	.....	1,300	35,690
Total	1,275	$164,058	112,697	$2,181,491	72,642	$2,901,485	186,592	$5,247,034	1,487	$62,153	$56,346	$1,334,573

(a) Includes 2 jacks valued at $275.
(b) Includes 7 grades valued at $175.
(c) Includes 230 grades valued at $6,900; 1 dog valued at $100.

ASSESSED VALUATIONS.

TABLE NO. 3—SHOWING THE ASSESSED VALUATION OF LIVE STOCK AFTER EQUALIZATION BY THE COUNTY BOARDS OF EQUALIZATION FOR THE YEAR 1905—Concluded.

COUNTIES	Yearlings		2 Year-Olds		3-Year-Olds		Cows		Stock Cattle		Total	
	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value
Beaverhead	6,516	$65,160	6,229	$87,280	.....	.....	1,236	$30,985	22,186	$403,875	45,446	$871,856
Broadwater	1,562	15,620	770	10,898	384	11,495	629	18,259	11,291	206,470	14,649	263,442
Carbon	5,523	55,230	3,655	51,170	229	5,725	1,720	33,000	15,206	273,710	25,933	418,835
Cascade	174	1,950	179	2,488	298	3,845	1,355	35,729	47,896	862,120	49,969	907,928
Chouteau	.....	.....	.....	.....	.....	.....	987	24,675	62,382	1,122,876	66,050	1,217,976
Custer	319	3,190	1,567	23,508	.....	.....	384	9,599	77,285	1,394,787	91,208	1,722,929
Dawson	5,645	56,450	4,982	70,294	.....	.....	327	9,245	44,437	808,307	73,618	1,392,861
Deer Lodge	308	3,738	390	5,824	62	2,597	944	26,921	1,750	31,431	3,454	70,501
Fergus	.....	.....	.....	.....	.....	.....	668	16,700	68,952	1,241,136	69,722	1,260,859
Flathead	1,516	18,392	1,237	18,883	329	8,440	3,066	84,745	8,333	153,327	14,481	283,757
Gallatin	.....	.....	.....	.....	.....	.....	3,286	83,210	28,876	398,484	33,623	524,184
Granite	2,605	26,05	2,120	29,684	1,161	29,025	622	18,670	6,097	109,747	12,640	215,251
Jefferson	3,2 2	32,168	3,172	44,827	851	22,025	1,496	37,720	6,731	121,275	15,558	263,205
Lewis and Clark	893	10,220	525	7,700	1,648	42,160	1,709	42,780	23,101	418,255	28,137	531,230
Madison	5,779	57,775	3,184	44,825	1,031	29,990	1,284	37,829	25,494	458,429	36,935	634,868
Meagher	5,648	56,480	17	336	.....	.....	449	11,225	26,487	479,108	33,096	562,349
Missoula	2,837	28,370	2,749	38,531	763	19,275	1,899	47,315	5,475	99,034	13,762	234,050
Park	1,520	15,248	639	8,986	.....	.....	1,878	49,470	14,465	257,748	19,153	351,792
Powell	4,181	41,810	142	1,988	.....	.....	610	17,255	14,682	264,276	20,319	347,239
Ravalli	3,050	30,500	2,368	33,152	.....	.....	2,647	66,470	4,295	77,310	13,794	255,072
Rosebud	1,457	14,801	688	13,444	5,857	146,665	1,591	33,405	34,462	585,785	44,055	794,095
Silver Bow	396	4,400	275	5,195	30	715	1,811	53,790	772	16,625	3,299	81,475
Sweet Grass	315	3,150	215	3,196	.....	.....	355	8,8[illegible]	23,257	418,626	24,367	440,597
Teton	4,039	32,410	1,128	13,848	.....	.....	2,644	60,816	37,239	595,824	47,732	779,945
Valley	29	290	22	308	.....	.....	.....	.....	43,997	790,246	44,050	790,924
Yellowstone	1,259	12,590	1,088	15,224	.....	.....	1,779	44,475	20,775	373,954	26,201	484,933
Total	58,773	$585,882	$37,341	$531,559	$12,643	$321,957	34,976	$903,163	675,923	11,962,866	871,251	15,702,153

ASSESSED VALUATIONS.

TABLE NO. I SHOWING THE ASSESSED VALUE OF SHEEP, ANGORA GOATS, AND HOGS AFTER EQUALIZATION BY THE COUNTY BOARDS OF EQUALIZATION FOR THE YEAR 1905.

COUNTIES	STOCK SHEEP		LAMBS		RAMS		TOTAL		HOGS		ANGORA GOATS	
	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value
Beaverhead	105,061	$262,830	21,039	$42,078	1,824	$9,120	127,924	$314,028	304	$1,530	.....	.....
Broadwater	30,111	75,277	8,100	16,200	90	450	38,301	91,927	624	3,120	13	$52
Carbon	84,982	212,220	21,074	42,148	.....	.....	106,966	254,378	1,315	6,575	.....	.....
Cascade	108,310	270,780	14,950	34,900	290	1,325	123,550	307,005	917	4,585	.....	.....
Chouteau	573,021	1,289,293	74,170	129,795	6,327	31,635	653,518	1,450,723	315	1,575	30	75
Custer	361,604	1,085,584	.....	.....	1,731	8,635	363,335	1,094,239	91	467	.....	.....
Dawson	297,053	756,338	16,620	33,275	2,243	10,811	316,516	800,424	125	679	125	520
Deer Lodge	3,204	8,260	700	1,400	.....	.....	4,004	9,660	203	1,015	.....	.....
Fergus	589,548	1,473,870	17,290	34 580	5,882	27,910	612,720	1,536,360	1,208	6,040	23	92
Flathead	752	1,935	.....	.....	.....	.....	752	1,935	1,175	6,594	.....	.....
Gallatin	26,160	65,528	.....	.....	.....	.....	26,160	65,528	1,531	7,605	.....	.....
Granite	4,042	10,105	.....	.....	.....	.....	4,042	10,105	130	653	848	3,392
Jefferson	9,060	22,843	.....	.....	75	225	9,135	23,068	269	1,446	1,277	5,545
Lewis and Clark	65,040	165,060	16,000	32,000	.....	.....	81,040	197,060	592	3,075	2,477	9,905
Madison	66,317	165,770	9,400	18,800	607	3,035	76,324	187,605	1,302	7,404	109	545
Meagher	206,969	516,928	61,671	123,342	3,052	15,100	271,692	655,380	244	1,220	3	15
Missoula	10,049	25,119	2,200	4,400	.....	.....	12,249	29,519	1,637	8,190	358	1,440
Park	50,867	125,917	11,025	22,050	.....	.....	61,892	147,967	856	4,542	748	2,067
Powell	56,463	140,202	.....	.....	85	425	56,548	140,627	70	350	33	132
Ravalli	10,788	26,970	1,947	3,894	167	835	12,902	31,699	2,178	10,890	.....	.....
Rosebud	205,546	513,860	7,187	14,374	1,591	7,767	214,324	536,001	162	951	10	400
Silver Bow	4,965	12,475	.....	.....	.....	.....	4,965	12,475	317	1,555	.....	.....
Sweet Grass	200,095	500,238	26,800	53,600	1,037	5,185	227,932	559,023	311	1,555	1,012	3,036
Teton	176,688	352,516	26,579	39,869	762	5,046	204,029	397,431	200	942	49	196
Valley	273,560	617,083	4,300	9,025	1,383	6,945	279,243	633,053	227	1,135	235	705
Yellowstone	282,865	707,162	34,270	68,540	1,258	6,290	318,393	781,992	537	2,685	.....	.....
Total	3,803,730	$9,404,183	375,322	$724,270	28,404	$140,759	4,207,456	10,269,212	16,871	$86,628	7,440	$28,117

ASSESSED VALUATIONS.

TABLE NO. 5—SHOWING ASSESSED VALUE OF RAILROADS AFTER EQUALIZATION BY THE STATE BOARD OF EQUALIZATION FOR THE YEAR 1905.

RAILROADS.	MAIN TRACKS								SIDE TRACKS				
	Franchise.	Roadway.	Roadbed..	Rails.....	Rolling Stock...	Value per Mile.....	Mileage...	Valuation Main Line	Mileage...	Value per Mile.....	Value.....	Value Main and Side Tracks....	Value by Systems..
Big Horn Southern	200	200	1,800	1,800	1,000	$5,000	$101 74	$508,700	22 53	$500	$11,265	$519,965	.....
Chicago, Bur. & Quincy...	200	200	1,100	1,100	800	3,400	85 54	290,836	5 37	340	1,825	292,661	$812,626
Butte, Anaconda & Pacific	500	700	5,400	2,700	5,132	14,432	25 67	370,469	47 13	1,443	68,008	438,477	.....
Spurs	300	700	5,000	1,900	3,194	11,094	18 95	210 231	13 84	1,109	15,348	225,579	.....
Stuart Branch B. A. P....	200	500	3,800	1,896	1,000	7,396	8 02	59,316	6 25	739	4,618	63,934	727,990
Great Northern	500	1,000	6,000	2,600	4,266	14,396	413 26	5,949,291	85 61	1,439	123,192	6,072,483	.....
Pacific Extension	500	1,000	6,000	2,600	4,296	14,396	401 15	5,774,955	72 34	1,439	104,097	5,879,052	.....
O'Brien Spur	125	600	1,000	400	180	2,305	10 32	23,787	2 18	230	501	24,288	.....
Melbourne Spur	125	600	1,000	400	180	2,305	49 74	114,650	3 73	230	858	115,508	.....
Kalispell Branch	250	500	2,500	1,650	1,100	6,000	15 03	90,180	5 87	600	3,522	93,702	12,185,033
Montana & Gt. Northern.	190	300	2,000	1,200	400	4,090	142 77	583,929	8 66	409	3,542	587,471	587,471
Montana Central	450	1,000	6,000	2,600	4,382	14,432	172 55	2,490,241	40 73	1,443	58,773	2,549,014	.....
Barker Branch	100	25	....	.....	.....	125	10 79	1,348	.....	.....	.....	1,348	.....
Fair Ground Branch	100	407	....	.....	.....	507	85	430	.....	.....	.....	430	.....
Neihart Branch	250	350	1,900	1,900	1,237	5,637	56 24	317,024	8 44	563	4,751	321,775	.....
Red Mountain Branch....	60	200	495	400	.....	1 155	1 47	1,697	.....	.....	.....	1,697	.....
Sand Coulee Branch	220	550	3,950	2,450	1,850	9,020	19 73	177,964	5 40	902	4,870	182,834	3,057,098
Montana Railroad	200	250	1,275	1,275	1,000	4,000	156 33	625,320	6 12	400	2,448	627,768	627,768
Northern Pacific	400	852	6,190	2,300	4,690	14,432	782 38	11,291,308	229 45	1,443	331,096	11,622,404	.....
Bitter Root Branch	400	900	6,000	2,000	3,328	12,628	47 40	598,567	8 76	1,262	11,055	609,622	.....
Bitter Root Branch Ext...	125	600	1,000	400	180	2,305	16 42	37,848	3 93	230	904	38,752	.....
Boulder Branch	100	300	1,200	900	.....	2,500	34 58	86,450	4 46	250	1,115	87,565	.....
Butte Line	450	950	6,000	2,600	4,432	14,432	71 43	1,030,877	26 40	1,443	38,095	1,068,972	.....
Clark's Fork Branch.....	150	400	1,400	1,400	1,272	4,622	19 44	89,851	7 91	462	3,654	93,505	.....
Coeur d'Alene Branch....	350	450	3,800	1,720	2,700	9,020	109 50	987,690	11 06	902	9,976	997,666	.....
Cokedale Branch	50	200	400	400	.....	1,050	3 62	3,801	62	105	65	3,866	.....
Elkhorn Branch	100	260	900	870	870	3,000	20 13	60,390	2 15	300	645	61,035	.....
Gaylord & Ruby Valley ..	250	387	1,900	1,900	1,200	5,637	45 73	257,780	8 00	563	4,504	262,284	.....
Marysville Branch	200	565	2,500	1,600	1,900	6,765	12 58	85,103	1 51	676	1,021	86,124	.....
Montana Union	500	1,000	6,100	2,500	4,332	14,432	52 81	762,154	24 14	1,443	34,834	796,988	.....
Butte Hill Spur	250	430	1,086	1,000	700	3,466	12 07	41,834	7 96	346	2,754	44,588	.....
Park Branch	350	500	3,870	1,600	2,700	9,020	54 27	489,515	7 18	902	6,476	495,991	.....
Philipsburg Branch	250	450	2,000	1,700	800	5,200	25 92	134,784	4 88	520	2,537	137,321	.....
Pony Branch	250	350	2,200	1,950	323	5,073	7 15	36,272	71	507	360	36,632	.....
Red Bluff Branch	250	350	2,200	1,950	323	5,073	20 90	106,025	1 80	507	912	106,937	.....
Red Mountain Branch....	100	100	700	600	182	1,732	16 51	28,595	4 43	173	766	29,361	.....
Rocky Fork Branch.....	350	450	3,800	1,700	2,720	9,020	44 37	400,217	13 25	902	11,952	412,169	.....
Wickes Branch	75	100	700	700	.....	1,575	5 81	9,150	1 76	157	276	9,426	17,001,208
Oregon Short Line	500	1,000	6,000	2,500	4,432	14,432	125 79	1,815,401	28 52	1,443	41,154	1,856,555	1,856,555
Yellowstone Park Ry	85	150	700	600	165	1,700	11 00	18,700	95	170	162	18,862	18,862
Total	....	....	....	.....	.....	.....	3,229 96	$35,962,680	734 03	.....	$911,931	36,874,611	36,874,611

ASSESSED VALUATIONS

TABLE NO. 6—SHOWING THE TOTAL ASSESSED VALUATION OF ALL CLASSES OF PROPERTY AFTER EQUALIZATION BY THE STATE AND COUNTY BOARDS OF EQUALIZATION FOR THE YEAR 1905.

COUNTIES	Real Estate and Improvements-Telegraph and Telephone Lines-Mining and Irrigating Ditches-Depots, Round Houses-Station Grounds	Live Stock	Personal Property Other than Live Stock	Total Real Estate and Personal Property	Railroads, Except Railroad Lands, Gravel Beds, Station Grounds, Depots and Round Houses	Grand Total
Beaverhead	$2,438,650	$1,454,561	$703,472	$4,596,686	$1,155,697	$5,752,383
Broadwater	1,035,157	461,296	250,311	1,746,764	625,510	2,372,274
Carbon	1,896,232	900,341	719,805	3,516,378	545,685	4,062,063
Cascade	11,028,248	1,501,080	2,592,328	15,121,656	1,621,856	16,743,512
Chouteau	2,629,017	3,013,744	1,019,873	6,662,634	4,038,122	10,700,756
Custer	1,567,119	3,262,584	786,905	5,616,608	1,064,170	6,680,778
Dawson	943,302	2,655,069	390,398	3,988,769	929,850	4,918,619
Deer Lodge	5,662,526	147,565	1,704,968	7,515,059	583,157	8,098,216
Fergus	3,388,282	3,150,246	1,642,072	8,180,600	166,040	8,346,640
Flathead	4,514,479	435,611	1,207,460	6,157,550	3,449,209	9,606,759
Gallatin	6,186,452	888,279	1,374,924	8,449,655	1,253,963	9,703,618
Granite	1,127,127	297,768	305,949	1,730,844	526,984	2,257,828
Jefferson	1,591,032	368,594	1,039,493	2,999,119	1,676,405	4,675,524
Lewis and Clark	11,012 000	911,614	3,749,131	15,672,745	1,445,066	17,117,811
Madison	2,427,796	1,162,764	1,208,732	4,799,292	579,062	5,378,354
Meagher	1,637,438	1,345,544	396,714	3,379,696	365,424	3,745,120
Missoula	5,686,213	395,442	2,299,914	8,381,569	4,011,796	12,393,365
Park	2,995,662	685,361	1,258,285	4,939,308	1,000,357	5,939,665
Powell	1,622,381	605,538	447,312	2,675,231	978,686	3,653,917
Ravalli	2,058,748	426,251	857,145	3,342,144	420,504	3,762,648
Rosebud	1,213,160	1,525,398	337,169	3,075,727	1,328,963	4,404,690
Silver Bow	16,788,990	183,075	18,308,645	35,280,710	1,534,602	36,815,312
Sweet Grass	1,444,559	1,112,146	363,311	2,920,016	763,812	3,683,828
Teton	1,446,428	1,350,310	353,483	3,150,221	1,845,888	4,996,109
Valley	536,437	1,625,137	379,290	2,540,864	2,969,881	5,510,745
Yellowstone	4,018,915	1,467,823	1,111,146	6,597,884	1,993,922	8,591,806
Total	$96,896,350	$31,333,144	$44,808,235	$173,037,729	$36,874,611	$209,912,340
Same property 1904	95,020,032	28,892,629	41,075,575	164,988,236	36,759,827	201,748,063
Increases	$1,876,318	$2,440,515	$3,732,660	$8,049,493	$114,784	$8,164,277

TAX LEVY, 1905.

COUNTIES	State	Stock Detective and Inspector	Stock Indemnity	Sheep Inspection and Indemnity Tax	State Bounty	Fish and Game	Total	General Fund	Contingent Fund	School Fund	High School Fund	Bond and Interest Fund	Road Fund	Poor Fund	Bridge Fund	Sinking Fund	Total	Total State and County
Beaverhead	2½	1½	1-20	¼	4½	....	8 4-5	5	....	2	1¾	½	1¾	1	1	.....	13	21 4-5
Broadwater	2½	1½	1-10	¼	4½	....	8 17-20	1	10	2	2	.....	1	½	½	.....	17	25 17-20
Carbon	2½	1½	1-10	¼	4½	....	8 17-20	6	2½	2	1	1½	3	.....	1	.....	17	25 17-20
Cascade	2½	1½	1-10	¼	4½	....	8 17-20	6	....	2	.....	.....	2	.....	....	.....	10	18 17-20
Choteau	2½	1½	¼	½	4½	....	9 5-20	4	1½	2	.....	1¼	1	1	¼	.....	11	20 5-20
Custer	2½	1½	1-10	½	4½	....	9 2-20	6	....	2	1	1 2-10	2	½	....	7-10	13 4-10	22 10-20
Dawson	2½	1½	1-10	½	3½	....	8 2-20	3	3	2	.....	.....	2½	½	½	1	12½	20 12-20
Deer Lodge	2½	1½	¼	¼	4½	....	9	6½	....	2	.....	1	3	½	1	.....	14	33
Fergus	2½	1½	1-10	¼	4½	....	8 17-20	3	2½	2	1½	1¼	1¾	½	....	.....	12½	21 7-20
Flathead	2½	1½	½	½	4½	....	9 10-20	5	....	2	1 1-10	9-10	3	.....	1	.....	13	22 10-20
Gallatin	2½	1½	1-10	½	4½	....	9 2-20	3	2	2	1	.....	2½	.....	½	1	12	21 2-20
Granite	2½	1½	1-10	½	4½	....	9 2-20	10½	5	2	.....	.....	2½	2	....	.....	24	33 2-10
Jefferson	2½	1½	1-10	¼	4½	....	8 17-20	3	2½	2	¾	.....	2	.....	....	.....	10¼	19 2-20
Lewis and Clark	2½	1½	¼	¼	4½	....	9	3½	....	2	.....	.....	2	1	1	.....	9½	18 10-20
Madison	2½	1½	1-10	½	4½	....	9 2-20	3	2	2	.....	.....	2	1	1	1	12	21 2-20
Meagher	2½	1½	1-10	¼	4½	....	8 17-20	7	....	2	.....	.....	1	.....	....	1	11	19 17-20
Missoula	2½	1½	½	¼	4½	....	9 5-20	3½	3½	2	.....	.....	1½	½	½	½	12	21 5-20
Park	2½	1½	.2	¼	4½	....	9 5-20	1½	2¾	2	.....	2½	1¾	½	1	1	15	24 5-20
Powell	2½	1½	1-10	¼	4½	....	8 17-20	6¾	....	2	.....	1¾	½	1	....	.....	14	22 17-20
Ravalli	2½	1½	½	¼	4½	....	9 5-20	6	4	2	.....	2	2	.....	1	.....	17	26 5-20
Rosebud	2½	1½	½	¼	4½	....	9 5-20	11	....	2	.....	½	1½	.....	1	.....	16	25 5-20
Silver Bow	2½	1½	½	½	4½	....	9 10-20	3½	....	2	.....	.....	1	1	½	½	8½	18
Sweet Grass	2½	½	1-10	¼	4½	....	8 17-20	4	1½	2	3	1½	2	.....	.....	.....	14	22 17-20
Teton	2½	1½	1-10	¼	4½	....	8 17-20	6	....	2	1¼	1	1½	¼	....	.....	12	20 17-20
Valley	2½	1½	1-10	½	4½	1-10	9 4-20	5½	2	2	.....	.....	1	½	1	1	13	22 4-20
Yellowstone	2½	1½	1-10	¼	4½	....	8 17-20	4½	2½	2	.....	1¼	3	-	½	1	15¼	24 2-20

ASSESSED VALUATIONS.

TABLE NO. 1—SHOWING THE ASSESSED VALUE OF REAL PROPERTY AFTER EQUALIZATION BY THE COUNTY BOARDS OF EQUALIZATION FOR THE YEAR 1906.

COUNTIES	Acres of Land.	Value of Real Estate Other than Town Lots.	Value of Improvements on Same.	Value of Improvements Listed to Another	Value of City and Town Lots	Value of Improvements on Same.	Value of Mining Claims	Value of Improvements on Mining Claims	Telegraph Lines: No. of Miles	Telegraph Lines: Value	Telephone Lines: No. of Miles	Telephone Lines: Value	Value of Mining Ditches	Value of Irrigating Ditches	Value of Depots, Round Houses, Etc	Total Value of Real Estate and Improvements
Beaverhead	338,867	1,104,241	507,611	14,797	308,145	508,565	34,313	12,795	615	12,951	380	19,330	300	.....	.....	2,553,051
Broadwater	211,507	675,407	148,290	24,707	71,909	115,485	.....	.....	43	9,611	111	8,705	7,275	4,400	9,550	1,075,339
Carbon	157,468	1,164,047	399,250	6,004	134,072	337,378	.....	.....	78	5,582	.....	16,349	.....	6,440	.....	2,068,502
Cascade	850,386	3,975,138	1,647,469	51,920	2,952,135	2,203,985	23,340	45,600	247	19,462	797	58,557	1,500	2,500	92,435	11,043,347
Chouteau	491,744	1,435,063	492,425	3,100	270,190	579,115	.....	.....	378	28,162	113	9,333	.....	.....	93,885	2,912,083
Custer	1,131,717	894,010	156,745	71,975	180,604	463,835	.....	.....	72	15,791	.....	4,072	.....	4,000	15,800	1,806,832
Dawson	837,317	469,629	28,045	84,270	199,195	280,145	.....	.....	.....	13,946	.....	5,470	.....	.....	37,500	1,060,200
Deer Lodge	110,574	297,974	2,782,065	2,300	1,041,582	1,272,105	24,430	21,640	.....	6 467	.....	9,264	128,100	.....	26,750	5,612,670
Fergus	986,440	2,276,195	610,995	3,160	397,481	657,155	13,580	112,936	.....	.....	365	13,259	14,000	.....	4,375	4,133,139
Flathead	984,691	4,036,781	342,815	29,335	504,222	594,505	.....	.....	975	25,177	.....	5,750	.....	2,170	85,995	5,624,780
Gallatin	651,979	3,565,870	700,890	12,280	702,890	1,355,420	.....	.....	102	17,080	188	27,050	.....	25,200	(1) 300	6,406,980
Granite	163,845	326,560	92,626	81,504	80,222	188,065	52,929	160,000	122	10,822	.....	6,965	11,710	7,034	.....	1,021,377
Jefferson	218,541	501,840	362,031	2,100	199,119	284,080	64,784	60,200	293	12,485	560	18,775	61,373	(2)	49,855	1,619,637
Lewis and Clark	474,686	1,703,800	1,707,725	.....	3,420,630	3,871,075	69,670	203,470	829	20,165	665	27,050	.....	.....	74,775	11,107,370
Madison	472,672	1,092,286	679,030	76,390	145,086	376,640	68,423	.....	227	6,920	205	16,700	.....	40,500	10,485	2,492,020
Meagher	753,679	1,190,981	209,524	15,460	69,578	154,410	12,788	4,089	.....	.....	212	6,500	.....	.....	5,500	1,678,830
Missoula	693,107	2,136,540	383,315	70,810	1,243,645	1,325,075	10,251	14,250	1,270	31,945	519	37,574	1,285	(2)	53,620	5,268,413
Park	503,186	1,260,943	314,755	48,145	694,958	830,095	19,170	.....	444	11,217	109	10,355	.....	7,880	.....	3,198,068
Powell	526,857	1,087,440	183,940	58,505	70,321	208,506	39 4 3	27,515	1,075	22,204	294	9,884	13,830	.....	13,100	1,714,708
Ravalli	321,792	1,290,471	377,015	4,165	196,971	222,050	4,040	4,355	29	1,918	47	7,388	.....	62,750	5,550	2,176,633
Rosebud	908,612	786,000	104,780	36,870	108,215	191,150	.....	.....	125	19,650	140	3,150	.....	35,000	27,250	1,312,064
Sanders	296,140	856,085	81,300	26,375	47,184	50,890	35	.....	112	21,585	10	650	.....	2,600	18,250	1,105,954
Silver Bow	80,178	212,640	221,040	298,085	7,902,070	7,402,855	163,290	620,510	109	11,105	153	69,140	48,500	(2)	58,815	17,008,710
Sweet Grass	592,197	1,204,037	168,390	18,740	73,673	157,755	.....	.....	52	11,814	141	7,552	.....	.....	10,250	1,652,271
Teton	343,507	1,257,058	172,332	58,070	63,734	102,005	.....	.....	210	17,280	30	5,880	.....	.....	51,770	1,728,079
Valley	15,488	77,440	31,352	115,020	122,948	201,715	.....	.....	204	22,685	37	1,525	.....	.....	12,650	615,935
Yellowstone	895,382	3,204,737	257,367	49,095	1,724,222	1,173,999	.....	.....	219	29,855	215	38,370	.....	26,100	59,899	6,563,644
Total	14,012,569	38,026,213	13,143,222	1,249,312	22,934,784	25,108,598	600,432	1,315,360	.....	397,092	.....	424,607	287,973	226,674	846,360	104,560,624

(1) Included in Improvements.

(2) Included in Mining Ditches.

ASSESSED VALUATIONS

TABLE NO. 2—SHOWING THE ASSESSED VALUE OF CERTAIN CLASSES OF PERSONAL PROPERTY AFTER EQUALIZATION BY THE COUNTY BOARDS OF EQUALIZATION FOR THE YEAR 1906.

COUNTY	Mortgages, Bonds, etc	Express, Water, StreetRail road, Electric Light and Gas Companies	Value of franchises of same	Watches, Jewelry and Plate	Household Goods and Furniture	Musical Instruments	Libraries Law and Miscellaneous	Goods, wares merchandise and consigned goods	Fixtures of Saloons, Stores, offices and other business places	Farming utensils	Wagons, etc., Harness, robes, saddles, blankets, etc	Machinery.....
Beaverhead	126,543	.....	.....	3,193	40,570	17,205	2,725	189,600	23,060	26,590	69,910	44,585
Broadwater	22,743	.....	.....	682	21,425	5,105	820	56,500	6,630	5,204	29,928	52,057
Carbon	72,968	.....	.....	.....	25,305	8,385	4,075	222,313	12,905	85,200	57,665	.....
Cascade	105,534	48,151	10,000	5,550	208,563	41,895	13,380	658,107	63,936	.....	118,879	491,485
Chouteau	152,580	.....	.....	1,858	65,955	8,949	1,225	259,508	29,385	32,030	80,814	61,495
Custer	39,556	.....	.....	2,820	57,315	12,780	6,025	158,470	24,280	26,940	64,398	(1)
Dawson	60,897	.....	.....	1,841	37,915	13,630	2,065	109,735	17,255	6,482	50,913	29,272
Deer Lodge	79,216	142,665	21,000	2,810	27,375	20,685	5,600	356,057	30,890	3,990 (2)	9,371	712,775
Fergus	235,530	.....	.....	2,685	59,705	19,690	4,245	357,670	35,050	27,787	100,313	161,424
Flathead	89,445	60,500	.....	.....	55,300	14,130	3,545	326,070	22,025	150,120	50,120	.....
Gallatin	80,560	25,000	.....	4,030	114,820	36,595	9,615	317,625	24,015	53,505	106,085	54,360
Granite	34,568	600	.....	1,230	15,615	6,330	1,270	70,690	7,975	7,705	23,985	88,010
Jefferson	66,454	129,000	.....	3,597	57,294	17,105	3,040	124,925	16,620	9,654	38,208	457,205
Lewis and Clark	194,275	398,430	365,000	18,475	279,575	43,945	24,675	948,595	95,405	13,575	88,250	94,825
Madison	226,717	24,800	.....	2,899	42,270	17,330	1,710	174,075	12,600	15,575	70,959	101,120
Meagher	36,389	1,500	.....	1,385	21,100	6,705	1,570	112,398	7,200	11,445	33,348	18,745
Missoula	239,592	192,476	35,000	4,830	97,570	29,645	7,485	422,770	41,730	9,490	52,372	102,955
Park	84,197	.....	.....	4,955	98,205	21,220	3,820	305,110	37,500	23,873	55,915	167,335
Powell	58,753	14,463	.....	1,120	14,030	3,865	2,400	91,280	5,090	4,408	34,854	22,022
Ravalli	119,412	44,000	.....	732	36,880	12,545	1,725	163,108	9,825	8,025	48,010	23,425
Rosebud	.....	5,000	.....	1,110	31,613	7,210	1,325	102,799	14,360	12,680	38,086	(1)
Sanders	61,159	.....	.....	360	10,310	1,640	4,619	29,065	4,175	1,805	11,405	30,075
Silver Bow	388,850	502,710	328,500	10,015	142,260	26,725	25,420	1,791,095	194,320	2,110	57,835	1,205,705
Sweet Grass	44,534	4,000	.....	220	21,325	7,395	1,525	94,490	6,865	11,756	26,165	15,005
Teton	79,593	.....	.....	215	26,790	4,875	1,465	127,864	9,383	16,450	42,796	12,680
Valley	67,772	.....	.....	1,396	41,854	8,110	4,139	146,899	19,245	4,007	23,711	.....
Yellowstone	13,823	.....	90,000	2,200	103,005	24,340	7,510	503,183	42,000	.....	64,061	64,805
Total	2,780,600	1,593,295	749,500	80,268	1,753,884	441,334	146,988	8,234,161	813,174	570,386	1,458,347	3,991,365

ASSESSED VALUATIONS

TABLE NO. 2—SHOWING THE ASSESSED VALUE OF CERTAIN CLASSES OF PERSONAL PROPERTY AFTER EQUALIZATION BY THE COUNTY BOARDS OF EQUALIZATION FOR THE YEAR 1906—Concluded.

COUNTY	Wheat, Oats, Barley, Hay and Wool	Lumber and Wood	Coal, Coke and Ice	Solvent Credits, including deposits in banks	Money on hand or special deposits	Notes	Bank Stock	Stored Ore and Tailings	Net proceeds of mines	Insurance Premiums	Any other personal property not above described	Total
Beaverhead	11,340	900	.....	38,500	30,665	.....	70,384	.....	300	29,021	.....	725,091
Broadwater	4,870	50	.....	29,533	.....	.....	22,153	.....	.....	9,193	250	267,433
Carbon	.....	.....	.....	10,000	.....	.....	97,000	.....	150,000	13,707	11,236	770,759
Cascade	.....	7,500	3,375	3,255	16,584	.....	327,584	.....	17,684	51,621	142,410	2,337,833
Chouteau	.....	6,800	.....	34,000	3,600	.....	282,028	.....	.....	32,208	75	1,052,510
Custer	.....	.....	.....	6,180	36,201	.....	303,971	.....	.....	.....	28,375	767,311
Dawson	.....	.....	.....	44,667	.....	.....	6,808	.....	.....	.....	5,075	386,525
Deer Lodge	1,650	51,775	450	13,278	21,785	.....	27,714	.....	851	40,928	40,021	1,711,183
Fergus	2,000	6,363	.....	18,800	10,000	.....	314,507	.....	302,987	25,720	32,976	1,727,365
Flathead	19,225	244,875	.....	.....	98,365	.....	.....	.....	.....	21,405	158,727	1,323,852
Gallatin	22,985	51,250	.....	63,925	39,255	.....	305,540	.....	.....	27,470	49,945	1,386,010
Granite	6,423	3,849	175	.....	7,978	.....	.....	.....	.....	3,192	2,810	282,325
Jefferson	223	3,344	1,500	12,705	35,756	.....	72,009	.....	65,000	15,506	.....	1,108,717
Lewis and Clark	.....	104,075	.....	209,950	97,455	.....	775,490	37,795	54,510	109,620	.....	4,053,520
Madison	3,815	5,850	.....	178,600	121,839	.....	174,615	.....	13,500	22,662	.....	1,210,327
Meagher	1,875	700	.....	21,300	20,000	.....	110,000	.....	.....	12,482	.....	418,142
Missoula	8,200	513,307	3,500	14,139	.....	.....	312,447	.....	6,500	48,430	25,151	2,167,689
Park	1,300	.....	850	.....	22,400	.....	116,011	.....	.....	18,639	166,585	1,128,215
Powell	2,120	1,415	.....	3,500	17,210	.....	58,600	.....	.....	7,850	55,214	401,194
Ravalli	3,700	202,742	.....	7,254	12,765	.....	50,772	.....	.....	5,466	5,000	755,716
Rosebud	.....	.....	700	26,235	16,800	.....	106,000	.....	.....	5,110	40,560	409,528
Sanders	465	69,952	.....	3,100	.....	.....	.....	.....	.....	.....	850	228,980
Silver Bow	8,250	69,830	2,000	268,650	1,163,280	.....	977,695	.....	18,653,695	237,075	3,575,425	29,531,445
Sweet Grass	.....	2,500	.....	4,500	800	.....	115,006	.....	.....	9,072	250	364,408
Teton	.....	400	.....	11,758	1,763	.....	21,440	.....	.....	9,267	795	367,534
Valley	.....	4,520	.....	16,830	.....	.....	38,734	.....	.....	.....	3,000	390,217
Yellowstone	.....	.....	.....	.....	.....	45,350	110,890	.....	.....	39,501	4,861	1,115,579
Total	98,541	1,351,997	12,550	1,040,650	1,777,101	45,350	4,897,389	.....	.....	39,401	4,861	1,115,579

(1) Included in Farming utensils.

(2) Wagons are included in marching.

ASSESSED VALUATIONS

TABLE NO. 3—SHOWING THE ASSESSED VALUE OF LIVE STOCK AFTER EQUALIZATION BY THE COUNTY BOARDS OF EQUALIZATION FOR THE YEAR 1906.

COUNTIES	HORSES						TOTAL	
	THOROUGHBRED		RANGE		COMMON WORK AND MULES			
	Number	Value	Number	Value	Number	Value	Number	Value
Beaverhead	100	23,170	5,897	118,240	2,969	149,885	8,966	291,295
Broadwater	35	6,505	2,740	54,325	1,305	61,576	4,080	122,406
Carbon	1	500	4,026	85,895	3,587	162,720	7,614	249,115
Cascade	11	4,270	3,517	87,985	4,803	208,721	8,331	300,976
Chouteau	45	10,945	7,402	148,060	3,684	184,200	11,132	343,205
Custer	14	14,800	13,822	316,987	4,736	198,805	18,672	530,592
Dawson	77	8,900	12,444	428,736	1,343	97,820	13,864	535,456
Deer Lodge	231	10,255	778	14,347	1,050	40,925	2,059	65,627
Fergus	58	20,825	6,455	129,100	5,091	240,355	11,604	390,280
Flathead	32	4,275	1,914	30,308	2,770	89,025	4,716	123,608
Gallatin	61	17,075	3,498	59,555	6,505	243,425	10,064	320,055
Granite	25	5,550	1,701	25,525	1,423	42,690	3,149	73,765
Jefferson	12	2,150	1,542	23,413	1,628	60,255	3,182	85,818
Lewis and Clark	53	6,225	3,398	53,465	2,758	103,180	6,209	162,870
Madison	56	15,125	6,277	122,340	4,519	213,060	10,852	350,525
Meagher	13	5,400	3,346	66,920	1,506	60,240	4,865	132,560
Missoula	22	3,592	1,347	21,675	2,689	92,635	4,058	117,902
Park	29	8,900	2,786	59,200	2,310	118,510	5,125	186,610
Powell	75	8,750	2,603	52,420	1,424	59,640	4,102	120,810
Ravalli	82	8,900	1,946	30,804	3,004	106,630	5,032	146,234
Rosebud	2	1,850	4,698	111,659	2,453	113,980	7,153	227,489
Sanders	4	940	536	8,119	581	19,255	1,121	28,314
Silver Bow	31	3,655	376	6,810	1,888	80,415	2,295	90,880
Sweet Grass	27	9,285	1,240	26,540	2,110	101,685	3,377	137,510
Teton	33	13,850	4,017	109,425	2,739	111,380	6,789	225,655
Valley	15	8,500	6,001	160,124	1,893	98,205	7,909	266,829
Yellowstone	31	12,125	3,174	77,430	3,308	149,995	6,513	239,550
Total	1,275	236,417	107,482	$2,429,407	74,076	$3,209,111	182,833	$5,865,935

ASSESSED VALUATIONS

TABLE NO. 4—SHOWING THE ASSESSED VALUE OF LIVE STOCK AFTER EQUALIZATION BY THE COUNTY BOARDS OF EQUALIZATION FOR THE YEAR 1906.

COUNTIES	BEEF CATTLE		YEARLINGS		TWO YEAR-OLDS		THREE-YEAR OLDS		COWS		STOCK CATTLE		TOTAL CATTLE	
	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value
Beaverhead	3,112	102,585	8,126	$73,136	9,390	$112,286	7,957	$213,512	.....	.....	22,323	$371,063	50,902	$873,182
Broadwater	8	(1) 400	1,498	14,982	886	12,392	9	2,605	920	23,777	10,516	167,902	13,923	222,058
Carbon	958	23,950	6,021	54,189	4,786	57,432	.....	.....	1,420	35,500	13,365	213,840	26,550	384,911
Cascade	315	6,375	.....	.....	.....	.....	.....	.....	1,174	30,345	46,587	656,551	48,076	693,271
Chouteau	566	16,860	.....	.....	.....	.....	.....	.....	811	20,275	50,068	801,088	51,445	838,223
Custer	.....	.....	512	5,386	374	5,380	10,573	285,230	334	9,090	63,652	1,171,409	75,445	1,476,495
Dawson	10,540	263,535	4,097	40,974	2,865	40,398	.....	.....	381	11,480	39,788	722,610	57,679	1,079,027
Deer Lodge	.....	.....	512	5,040	298	3,554	266	8,580	875	21,885	1,314	21,105	3,305	63,164
Fergus	85	(2) 3,500	132	1,188	.....	.....	.....	.....	950	22,750	60,148	1,022,516	61,315	1,050,954
Flathead	.....	.....	1,290	11,969	770	9,540	146	3,455	2,674	67,905	6,544	107,481	11,474	205,350
Gallatin	1,084	34,980	.....	.....	.....	.....	.....	.....	3,256	83,420	28,138	369,630	32,478	488,030
Granite	41	(1) 2,050	3,110	27,990	2,108	25,296	889	22,225	6,008	1,024	6,670	106,720	18,826	202,305
Jefferson	106	(1) 5,350	3,198	29,955	3,034	36,706	627	15,675	1,422	38,636	5,950	97,541	14,337	223,023
Lewis and Clark	212	10,500	1,031	9,785	895	10,795	979	23,965	1,803	41,585	22,291	358,970	27,214	455,560
Madison	113	3,480	5,020	27,175	3,132	38,681	947	20,700	1,327	39,175	26,209	419,702	36,778	557,373
Meagher	519	12,975	6,471	58,239	20	500	126	(1) 5,040	274	6,850	26,787	428,592	34,197	512,196
Missoula	20	(1) 685	2,027	18,491	1,523	18,369	605	15,880	1,823	41,625	3,604	57,833	9,642	152,883
Park	854	26,315	544	5,102	313	4,013	.....	.....	1,815	46,380	13,833	223,262	17,359	305,072
Powell	(1) 859	25,100	3,785	34,074	84	1,008	.....	.....	707	17,943	14,145	226,823	19,581	304,948
Ravalli	.....	.....	3,302	29,718	2,639	31,668	1,144	36,100	2,846	76,755	4,566	73,056	14,497	247,297
Rosebud	.....	.....	901	9,121	1,211	17,061	3,798	95,015	1,594	33,152	41,392	659,901	48,902	814,250
Sanders	13	(1) 405	563	5,287	498	6,153	169	4,154	313	6,305	890	14,573	2,446	36,877
Silver Bow	3	150	294	3,210	180	2,980	90	2,325	1,817	54,420	1,252	25,355	3,636	88,440
Sweet Grass	.....	.....	5,232	52,320	212	2,898	552	13,800	392	9,800	18,490	294,544	24,878	373,362
Teton	665	16,875	7	63	2	24	651	(3) 35,725	135	3,375	45,008	721,408	46,378	777,470
Valley	.....	.....	.....	.....	.....	.....	4,104	101,865	295	7,065	43,806	598,842	48,205	707,772
Yellowstone	929	25,470	1,326	11,938	897	10,767	.....	.....	1,782	44,585	19,318	309,096	24,252	401,856
Total	20,950	581,540	58,997	$529,032	36,120	$447,361	33,788	$914,911	37,161	816,102	636,654	10,241,403	823,720	13,535,349

(1) Thoroughbred cattle. (2) Includes 55 bulls valued at $2,750. (3) Graded cattle and bulls.

Note—Flathead County has 90 buffaloes valued at $5,000, which are included in the total.

ASSESSED VALUATIONS

TABLE NO. 5—SHOWING THE ASSESSED VALUE OF LIVE STOCK AFTER EQUALIZATION BY THE COUNTY BOARDS OF EQUALIZATION FOR THE YEAR 1906.

COUNTY	STOCK SHEEP		LAMBS		RAMS		TOTAL SHEEP		HOGS		ANGORA GOATS	
	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value
Beaverhead	149,119	$448,757	2,600	$10,050	2,001	$10,005	$153,720	$468,812	291	$1,455	.....	.....
Broadwater	36,611	109,833	.....	.....	138	690	36,749	110,523	578	2,877	31	124
Carbon	104,162	312,486	.....	.....	448	2,240	104,610	314,726	1,199	4,796	.....	.....
Cascade	107,647	322,996	8,700	21,750	425	2,575	116,772	347,321	531	2,655	2	10
Chouteau	472,416	1,299,141	46,552	93,104	4,453	22,265	523,421	1,414,510	173	865	107	278
Custer	434,865	1,298,463	.....	.....	1,797	8,985	436,662	1,307,448	98	490	.....	.....
Dawson	345,993	1,037,819	47,773	119,100	2,615	13,260	396,341	1,170,179	289	1,523	.....	.....
Deer Lodge	908	2,732	.....	.....	.....	.....	908	2,732	305	1,371	.....	.....
Fergus	528,494	1,585,482	15,560	38,900	5,049	25,245	549,103	1,649,627	1,048	5,240	.....	.....
Flathead	702	1,850	.....	.....	.....	.....	702	1,850	776	3,491	.....	.....
Gallatin	28,852	86,735	.....	.....	.....	.....	28,852	86,735	1,300	6,190	(1)	.....
Granite	5,723	17,170	.....	.....	.....	.....	5,723	17,170	135	675	1,270	5,080
Jefferson	10,900	32,705	.....	.....	.....	.....	10,900	32,705	177	1,092	465	1,340
Lewis and Clark	96,554	290,005	.....	.....	.....	.....	96,554	290,005	355	1,785	1,055	3,375
Madison	72,350	217,310	7,729	21,394	600	3,325	80,079	242,029	973	5,960	1,138	3,776
Meagher	234,888	704,664	.....	.....	3,372	10,116	238,260	714,780	231	1,152	3	15
Missoula	4,616	13,851	.....	.....	.....	.....	4,616	13,851	894	3,577	164	492
Park	60,513	169,056	.....	.....	1,640	4,575	62,153	173,631	637	3,185	(2)	.....
Powell	54,933	164,799	.....	.....	.....	.....	54,933	164,799	146	585	18	54
Ravalli	19,011	57,033	198	990	1,880	7,520	21,089	65,543	.....	.....	.....	.....
Rosebud	330,314	990,942	575	2,525	296	1,690	331,185	996,157	257	1,757	120	360
Sanders	.....	.....	.....	.....	.....	.....	.....	.....	163	815	300	1,200
Silver Bow	2,525	6,775	.....	.....	.....	.....	2,525	6,775	381	1,980	.....	.....
Sweet Grass	209,618	628,854	37,180	111,540	679	3,395	247,477	743,789	506	2,530	1,324	3,972
Teton	133,104	399,312	29,215	73,038	1,121	9,790	163,443	482,140	129	645	2	6
Valley	294,600	814,962	3,200	6,400	1,189	7,395	299,289	827,757	241	1,255	242	726
Yellowstone	338,167	1,010,501	.....	.....	100	400	338,267	1,010,901	342	1,654	.....	.....
Total	4,077,585	12,024,292	198,642	497,791	28,106	133,471	4,304,333	$12,655,555	$12,155	$59,900	6,231	$20,808

(1) Included in sheep.

(2) Included in rams.

ASSESSED VALUATIONS.

TABLE NO. 5—SHOWING ASSESSED VALUE OF RAILROADS AFTER EQUALIZATION BY THE STATE BOARD OF EQUALIZATION FOR THE YEAR 1906.

	MAIN TRACKS								SIDE TRACKS				
	Franchise	Roadway	Road bed	Rails	Rolling Stock	Value Per Mile	Mileage Main Line	Valuation Main Line	Mileage	Value per Mile	Value	Value Main and Side Tracks	Value by Systems
Big Horn Southern	200	200	2,425	1,800	1,000	$5,625	101.74	$572,287	22.71	562	$12,780	585,067	.....
Chicago, Burlington & Quincy	200	200	1,100	1,100	800	3,400	85.54	290,836	5.48	340	1,863	292,699	$877,766
Butte, Anaconda & Pacific	450	950	6,900	2,600	5,336	16,236	25.67	416,779	46.46	1,623	75,404	492,182	.....
Spurs.	300	700	5,405	1,900	1,000	12,500	19.33	241,625	14.82	1,250	18,525	260,150	.....
Stuart Branch B. A. & P.	200	500	3,800	1,896	1,000	7,296	8.17	60,425	6.08	739	4,493	64,918	817,250
Great Northern	500	1,000	7,000	3,395	4,300	16,195	413.26	6,692,745	84.15	1,619	136,238	6,828,983	.....
Pacific Extension	500	1,000	7,000	3,395	4,300	16,195	401.15	6,496,624	73.93	1,619	110,692	6,616,316	.....
O'Brien Spur	125	600	1,000	400	180	2,305	10.32	23,787	2.18	230	501	24,288	.....
Melbourne Spur	125	600	1,000	400	180	2,305	49.74	114,650	1.93	230	443	115,093	.....
Kalispell Branch	250	500	2,500	1,650	1,100	6,300	15.02	90,180	4.70	600	2,820	93,000	13,677,680
Montana & Great Northern	200	300	2,000	1,200	400	4,100	142.77	585,357	8.82	410	3,616	588,973	588,973
Montana Central	450	950	6,900	2,600	5,336	16,236	169.18	2,746,806	42.86	1,623	69,561	2,816,367	.....
Barker Branch	100	25	.....	.....	.....	125	10.79	1,348	.....	.....	.....	1,348	.....
Fair Ground Branch	100	407	.....	.....	.....	507	85	430	.....	.....	.....	430	.....
Neihart Branch	250	350	1,900	1,900	1,237	5,637	56.24	317,025	7.48	563	4,211	321,235	.....
Red Mountain Branch	60	200	495	400	.....	1,155	1.47	1,697	.....	.....	.....	1,697	.....
Sand Coulee Branch	220	650	3,950	2,054	1,850	9,020	19.73	177,964	5.14	902	4,636	182,600	.....
Mountain View Spur	250	450	2,100	1,000	700	4,500	3.37	15,165	.....	.....	.....	15,165	3,338,842
Montana Railroad	250	450	2,100	1,000	700	4,500	156.33	703,485	10.12	450	4,554	708,039	708,039
Northern Pacific	450	950	6,900	2,600	5,336	16,236	782.38	12,702,721	256.51	1,623	415,991	13,118,712	.....
Bitter Root Branch	400	900	6,000	2,000	3,328	12,628	47.37	598,188	8.61	1,262	10,865	609,053	.....
Bitter Root Branch Extension	125	600	1,195	400	180	2,500	16.45	41,125	6.88	250	1,720	42,845	.....
Boulder Branch	100	300	1,200	900	.....	2,500	27.23	68,075	1.05	250	1,012	69,087	.....
Butte Line	450	950	6,900	2,600	5,336	16,236	71.39	1,159,088	31.36	1,623	50,897	1,209,985	.....
Clark's Fork Branch	150	400	1,400	1,400	1,272	4,622	19.43	89,805	7.75	462	3,580	93,385	.....
Coeur d'Alene Branch	350	450	3,800	1,720	2,700	9,020	109.50	987,690	11.36	902	10,246	997,936	.....
Cokedale Branch	50	200	400	400	.....	1,050	3.61	3,790	.....	.....	.....	3,790	.....
Elkhorn Branch	100	260	900	870	870	3,000	20.12	60,360	2.06	300	618	60,978	.....
Gaylord & Ruby Valley Branch	300	400	2,700	1,900	1,200	6,500	45.73	297,245	5.10	650	3,315	300,560	.....
Marysville Branch	200	565	2,500	1,600	1,900	6,765	12.58	85,103	1.47	676	993	86,096	.....
Montana Union	450	950	6,900	2,600	5,336	16,236	52.80	857,260	23.98	1,623	38,919	896,179	.....
Butte Hill Spur	250	450	2,100	1,000	700	4,500	10.43	46,935	6.33	450	2,852	49,797	.....
Park Branch	250	500	3,870	1,600	2,700	9,020	54.26	489,425	6.73	902	6,070	495,495	.....
Philipsburg Branch	250	450	2,000	1,700	800	5,200	25.93	134,836	4.41	520	2,293	137,129	.....
Pony Branch	250	350	2,200	1,950	350	5,100	6.65	33,915	0.43	510	219	34,134	.....
Red Bluff Branch	250	350	2,200	1,950	350	5,100	21.00	107,100	1.92	510	979	108,079	.....
Red Mountain Branch	100	100	750	600	182	1,732	16.51	28,595	4.25	173	735	29,330	.....
Rocky Fork Branch	400	600	4,000	1,700	2,800	9,500	44.37	421,515	13.33	950	12,663	434,178	.....
Wickes Branch	75	100	700	700	.....	1,575	5.81	9,150	1.25	157	196	9,346	18,786,091
Oregon Short Line	450	950	6,900	2,600	5,336	16,236	125.79	2,042,326	27.83	1,623	45,168	2,087,494	2,087,494
Yellowstone Park Railway	85	150	700	600	165	1,700	11.00	18,700	0.95	170	162	18,862	18,862
Total	.....	.....	.....	.....	.....	.....	3,221.02	$39,832,160	763.28	.....	$1,068,840	$40,901,000	$40,901,000
Same 1905	.....	.....	.....	.....	.....	.....	3,229.96	35,962,680	734.03	.....	911,931	36,874,611	36,874,611

ASSESSED VALUATIONS

TABLE NO. 6 SHOWING THE TOTAL ASSESSED VALUATION OF ALL CLASSES OF PROPERTY AFTER EQUALIZATION BY THE STATE AND COUNTY BOARDS OF EQUALIZATION FOR THE YEAR 1906.

COUNTIES	Acres of Land	Real Estate and Improvements-Telegraph and Telephone Lines-Mining and Irrigating Ditches-Depots, Round Houses, Station Grounds.....	Live Stock.....	Personal Property Other than Live Stock	Total Real Estate and Personal Property	Railroads, Except Railroad Lands, Gravel Beds, Station Grounds, Depots and Round Houses.....	Grand Total.....
Beaverhead	338,867	$2,553,051	1,634,744	725,091	4,912,886	1,299,065	6,211,951
Broadwater	211,507	1,075,339	457,987	267,433	1,800,759	708,080	2,508,839
Carbon	157,468	2,068,502	953,548	770,750	3,792,809	566,541	4,359,350
Cascade	850,386	11,043,347	1,341,233	2,337,833	14,726,413	1,742,754	16,468,167
Chouteau	491,774	2,912,083	2,597,081	1,052,510	6,561,674	4,542,755	11,104,429
Custer	1,131,[illegible]	1,806,832	3,315,025	767,311	5,889,168	1,201,293	7,090,461
Custer	1,231,717	1,060,200	2,786,185	386,525	4,232,910	1,054,092	5,287,002
Deer Lodge	110,574	5,612,670	132,894	1,711,486	7,457,050	648,477	8,105,527
Fergus	986,410	4,133,139	3,096,101	1,727,368	8,956,608	188,118	9,144,726
Flathead	984,691	5,624,780	334,299	1,206,760	7,165,839	3,848,167	11,014,006
Gallatin	651,979	6,406,980	901,310	1,386,610	8,694,900	1,415,160	10,110,060
Granite	163,815	1,021,377	298,995	282,325	1,602,697	576,193	2,178,893
Jefferson	218,541	1,619,637	343,978	1,108,717	3,072,332	1,852,073	4,924,405
Lewis and Clark	474,686	11,107,370	913,655	4,053,520	16,074,545	1,611,525	17,686,070
Madison	472,672	2,492,020	1,159,663	1,210,327	4,862,010	635,232	5,497,242
Meagher	735,679	1,678,830	1,360,703	418,142	3,457,675	411,426	3,869,101
Missoula	693,107	5,349,589	288,705	2,167,689	7,805,983	2,516,816	10,322,799
Park	503,166	3,198,068	668,498	1,128,215	4,994,781	1,067,113	6,061,894
Powell	526,857	1,714,708	591,196	401,194	2,707,098	1,097,606	3,804,704
Ravallie	321,792	2,176,633	459,074	755,716	3,391,423	424,067	3,815,489
Rosebud	908,612	1,312,064	2,039,013	409,528	3,760,606	1,498,580	5,259,185
Sanders	296,140	1,105,954	67,206	228,980	1,402,140	1,850,988	3,253,128
Silver Bow	80,178	17,008,710	188,075	29,531,445	46,728,230	1,700,345	48,428,575
Sweet Grass	592,197	1,652,271	1,261,163	364,408	3,277,842	862,174	4,140,016
Teton	343,507	1,728,069	1,185,916	367,534	3,581,519	2,018,652	5,600,171
Valley	15,488	615,935	1,801,339	390,217	2,810,491	3,346,765	6,157,256
Yellowstone	895,382	6,563,644	1,653,961	1,115,579	9,333,184	2,216,941	11,550,125
Total	14,194,569	$104,611,802	$32,137,547	$56,273,222	193,052,571	40,901,000	233,953,571
Same Property in 1905	.....	96,866,250	31,333,141	44,808,237	173,037,729	36,874,611	209,912,340
Increases	.....	7,745,152	804,403	11,464,987	20,014,842	4,026,389	24,041,231

TAX LEVY, 1906

COUNTIES	State	Stock Detective and Inspector	Stock Indemnity	Sheep Inspection and Indemnity tax	State Bounty	Fish and Game	Total Mills	General Fund	Contingent Fund	School Fund	High School Fund	Bond and Interest Fund	Road Fund	Poor Fund	Bridge Fund	Sinking Fund	Total Number Mills Levied
Beaverhead	2½	1½	1-20	¼	4½	....	8 8-10	5	....	2	1¾	¾	1½	¾	¾	.....	12½
Broadwater	2½	1½	1-10	¼	4½	....	8 17-20	3	6½	2	3	.....	2	½	1	.....	16
Carbon	2½	1½	1-10	¼	4½	....	8 17-20	5½	2	2	1	1½	3	....	1	.....	
Cascade	2½	1½	1-10	¼	4½	....	8 17-20	2½	1½	2	.....	1 7-10	2	3-10	.....	.....	.....
Chouteau	2½	1½	¼	½	4½	....	9¼	3	1½	2	.....	1½	2	1	¼	.....	11
Custer	2½	1½	1-10	1	4½	....	9 1-10	3½	2	2	1	1	2	.....	.....	1½	13
Dawson	2½	1½	1-10	¼	4½	....	8 17-20	2	2	2	.....	.....	2½	½	½	1	12½
Deer Lodge	2½	1½	¼	¼	4½	....	9	6½	....	2	.....	¾	3	....	1	.....	13¼
Fergus	2½	1½	1-10	¼	4½	....	8 17 20	2½	2	2	1½	1	1¾	½	.....	.....	11¼
Flathead	2½	1½	½	½	4½	....	9½	4 3-10	....	2	1	7-10	3	....	1	.....	12
Gallatin	2½	1½	1-10	½	4½	....	9 1-10	2½	2	2	1	.....	2½	....	1	1	12
Granite	2½	1½	1-10	½	4½	....	9 1-10	6	5	2	3	.....	3	¾	.....	.....	20¼
Jefferson	2½	1½	1-10	¼	4½	....	8 17-20	2	1½	2	¾	.....	1½	½	.....	1	9¼
Lewis and Clark	2½	1½	½	¼	4½	....	9	3	....	2	.....	1	1	1	1	.....	9
Madison	2½	1½	1-10	½	4½	....	9 1-10	3	2	2	.....	.....	2	1	.....	1	11
Meagher	2½	1½	1-10	¼	4½	....	8 17-20	4½	1	2	.....	.....	1	1	½	1	11
Missoula	2½	1½	¼	¼	4½	....	9	2¾	3	2	1¼	.....	1½	½	1	½	12½
Park	2½	1½	¼	½	4½	....	9¼	1½	2½	2	2½	1½	3	½	½	¾	14¾
Powell	2½	1½	1-10	¼	4½	....	8 17-20	6	..	2	2	¾	2	1¼	.....	.....	14
Ravalli	2½	1½	½	¼	4½	....	9¼	6	4	2	.....	2	2	....	1	.....	17
Rosebud	2½	1½	½	¼	4½	....	9¼	8⅛	2	2	.....	⅛	1½	¼	.....	.....	14
Sanders	2½	1½	½	¼	4½	....	9¼	3½	2½	2	.....	1½	1½	½	½	.....	12
Silver Bow	2½	1½	½	....	4½	....	9	4	....	2	.....	.....	1	1	.....	½	8½
Sweet Grass	2½	1½	1-10	¼	4½	....	8 17-20	4	2	2	2	1½	2	....	¼	.....	14
Teton	2½	1½	1-10	¼	4½	....	8 17-20	5	....	2	1¼	9-10	1	....	¼	.....	10 4-10
Valley	2½	1½	1-10	½	4½	....	9 1-10	5½	1	2	.....	.....	1	½	1	1	12
Yellowstone	2½	1½	1-10	¼	4½	....	8 17-20	2½	1¾	2	.....	1	3	¼	½	1	12

PENITENTIARY STATISTICS 1896 to 1905

Statement Showing the Number and Kind of Offenses for Which Commitments Were Made to the State Penitentiary by Years, from 1896 to 1905. Inclusive.

Offense for Which Committed.	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	Total
Abortion	....	1	....	....	....	....	....	....	....	....	1
Arson	....	....	....	1	1	....	1	....	....	....	3
Assault	2	....	....	....	8	15	4	7	5	19	60
Assault, first degree	1	1	5	9	1	....	....	....	....	....	17
Assault, second degree	16	19	15	13	....	....	22	12	11	....	108
Assisting prisoner to escape	....	....	....	....	....	1	....	....	....	....	1
Bigamy	....	....	....	3	1	3	1	....	1	....	9
Blackmail	....	....	....	....	....	....	....	....	....	1	1
Branding—Felonious	2	....	....	2	....	....	....	....	1	....	5
Bribery	....	....	....	....	....	....	1	....	....	2	3
Burglary	11	....	....	....	47	47	34	33	41	40	249
Burglary, first degree	35	30	33	21	....	....	....	....	....	....	119
Burglary, second degree	19	9	22	10	....	....	16	16	7	....	99
Cheating	....	....	....	....	1	....	....	....	....	....	1
Counterfeiting	2	....	....	....	....	....	....	....	....	4	6
Counterfeit money—attempting to pass	1	....	....	....	....	....	....	....	....	....	1
Counterfeit money—passing	....	....	....	....	....	1	....	....	....	....	1
Counterfeit money—having in possession	....	....	....	1	....	....	....	....	....	....	1
Destroying registered letter	....	1	....	....	....	....	....	....	....	....	1
Embezzlement	3	1	....	....	1	....	....	....	....	....	5
Escaping from State Prison	2	....	6	....	....	....	1	....	....	1	10
Extortion—Attempted	....	....	....	....	....	1	....	....	....	....	1
False pretenses—Obtaining money or property	1	....	....	....	2	....	....	....	....	....	3
False report to Comptroller of the Currency	....	....	....	....	....	....	1	....	....	....	1
Felony	....	....	....	....	....	....	....	2	3	....	5
Forgery	7	10	56	19	14	21	21	19	23	26	216
Gambling	....	1	....	....	....	....	....	....	....	....	1
Grand Larceny	51	46	22	29	41	70	57	51	60	52	465
Grand Larceny—attempted	....	....	1	....	....	....	....	....	....	....	1
Incest	....	....	....	....	2	....	....	1	1	....	4
Injury to jail	....	3	3	2	....	8	6	3	2	5	32
Kidnaping	....	....	....	....	....	1	....	1	....	....	2
Larceny	....	....	....	....	....	2	....	....	....	....	2
Letter—Mailing obscene	....	1	....	....	....	....	....	....	....	....	1
Letter Embezzlement of	....	....	....	....	....	....	....	....	....	2	2
Malicious Mischief	....	....	....	....	....	....	....	1	1	3	5
Manslaughter	5	6	4	12	8	10	9	4	11	6	75
Mayhem	....	4	1	....	....	1	....	....	1	....	7
Misappropriating Bank Funds	....	1	....	....	....	....	....	....	....	....	1
Murder, second degree	6	3	12	8	10	11	6	7	6	8	77
Obtaining Money on Worthless Check	....	....	....	....	....	....	....	....	....	1	1
Opening U. S. Mail	....	....	....	....	1	....	....	....	....	....	1
Passing Raised Money	....	....	....	....	....	....	1	....	....	....	1
Perjury	....	2	....	3	2	1	....	....	1	1	10
Petit Larceny	2	3	2	2	4	1	1	1	1	....	17
Prizefighting	....	....	1	....	....	....	....	....	....	....	1
Railway Holdup	....	....	....	....	....	....	....	....	....	1	1
Rape	5	7	3	2	1	6	4	4	4	3	39
Rape—Attempted	....	....	1	....	....	....	....	....	....	....	1
Rape—Assault to	1	....	....	....	....	....	....	....	....	....	1
Receiving Stolen Property	1	2	1	2	....	3	1	....	3	....	13
Robbery	6	20	7	9	9	9	21	10	8	6	105
Robbery—Attempted	2	....	....	....	....	....	....	....	....	....	2
Secreting Public Record	....	....	1	....	....	....	....	....	....	....	1
Seduction	....	....	....	....	....	....	....	1	....	....	1
Stealing from U. S. Mail	....	....	....	....	....	1	....	....	....	....	1
Sodomy	2	2	1	....	2	....	1	1	1	1	11
Uttering Fictitious Check	....	1	....	....	2	....	....	....	....	....	3
Total	169	174	197	148	158	209	209	174	192	182	1,812
Number of Prisoners Discharged, by Years	182	151	173	177	156	135	147	188	192	187	1,688
Increase or Decrease	13	23	24	29	2	74	62	14	....	....	124
Add Total Number in Confinement Dec. 31, 1895	....	....	....	....	....	....	....	....	....	....	338
Total in Confinement Dec. 31, 1905	....	....	....	....	....	....	....	....	....	....	462

PENITENTIARY

STATEMENT SHOWING BY COUNTIES THE OFFENSES FOR WRICH PRISONERS THE

Tracing Number	Offense for Which Committed	Beaverhead	Broadwater	Carbon	Cascade	Chouteau	Custer	Dawson	Deer Lodge	Fergus	Flathead	Gallatin	Granite
1	Assault					1		1					
2	Assault, Second Degree			1						1		3	
3	Burglary			2		2	2	3	5	4	5	1	
4	Burglary, Second Degree												
5	Bigamy												
6	Felony						1						
7	Forgery			1		1	1				3		4
8	Grand Larceny	2			1	9	8	1	2	5	1	6	3
9	Incest												
10	Injury to Jail			1		1							
11	Illegal Branding												
12	Malicious Mischief										1		
13	Mayhem												
14	Manslaughter					2			1	1			1
15	Murder, Second Degree									1		1	
16	Petit Larceny				1								
17	Perjury									1			
18	Robbery												
19	Rape												
20	Receiving Stolen Property							1	1		1		
21	Sodomy												
22	Total	2		5	2	16	12	6	9	13	11	11	8
23	Total in Confinement Dec. 31, 1903.	12	4	15	26	51	17	9	24	21	20	8	4
24	Grand Total	14	4	20	28	67	29	15	33	34	31	19	12
25	Discharged by Expiration	2	2	2	11	15	8	2	11	9	7	3	1
26	Discharged by Commutation								1				
27	Discharged by Pardon	1				2	1		4				
28	Discharged by Order of Court				1								
29	Insane					1							
30	Total Discharges	3	2	2	12	18	9	2	16	9	7	3	1
31	Total in Confinement Dec 31, 1904.	11	2	18	16	49	20	13	17	25	24	16	11
32	Percentage of Prisoners Confined from each County	2.36	.43	3.36	3.43	10.48	4.28	2.78	3.64	5.35	5.14	3.43	2.36

STATISTICS—1904

WERE COMMITTED TO THE MONTANA STATE PRISON AT DEER LODGE DURING YEAR 1904.

Jefferson	Lewis and Clarke	Madison	Meagher	Missoula	Park	Powell	Ravalli	Rosebud	Silver Bow	Sweet Grass	Teton	Valley	Yellowstone	U. S. Court	Total	Percentage of commitments during 1904, classified by crime	Tracing Number
				1									2		5	2.60	1
				2	1			1				1	1		11	5.73	2
	2			1	5				6				3		41	21.35	3
				2					2	2		1			7	3.65	4
							1								1	.52	5
	2														3	1.56	6
	1			2	3				1	2	1	1	1	1	23	11.98	7
		1		2	4		1		2	1	1	7	2	1	60	31.25	8
			1												1	.52	9
															2	1.04	10
												1			1	.52	11
															1	.52	12
					1										1	.52	13
				1					3			1		1	11	5.73	14
				2					2						6	3.13	15
															1	.52	16
															1	.52	17
	1			3					3				1		8	4.17	18
			1				1	1	1						4	2.09	19
															3	1.56	20
					1										1	.52	21
	6	1	2	16	15		3	2	20	5	2	12	10	3	192	100.00	22
	51	15		18	30	1	5	3	89	9	8	3	22	2	467		23
									109	14	10	15	32	5	659		24
	57	16	2	34	45	1	8	5									
	12	4	1	16	14		3	3	26	3	6	2	12		175		25
															1		26
	1			1											10		27
	1								2						4		28
									1						2		29
	14	4	1	17	14		3	3	29	3	6	2	12	0	192		30
	43	12	1	17	31	1	5	2	0	11	4	13	20	5	467		31
	9.21	2.57	.21	3.64	6.64	.21	1.07	.43	17.13	2.36	.86	2.78	4.28	1.07		100.00	32

PENITENTIARY

STATEMENT SHOWING BY COUNTIES THE OFFENSES FOR WRICH PRISONERS THE

Tracing Number	Offense for Which Committed	Beaverhead	Broadwater	Carbon	Cascade	Chouteau	Custer	Dawson	Deer Lodge	Fergus	Flathead	Gallatin	Granite
1	Assault				1	4	1	1	1	1	2	1	
2	Burglary	1			4	1					1	2	
3	Bribery					1							
4	Blackmail												
5	Counterfeiting												
6	Embezzling Letters												
7	Escape from State Prison												
8	Forgery	1			1	2	4				1	3	
9	Grand Larceny	4			4	3	2	2		8	4	6	
10	Injury to Jail	1				2							
11	Manslaughter					1		1				1	
12	Murder, Second Degree	1						1				1	
13	Malicious Mischief												
14	Obtaining Money on Worthless Check												
15	Perjury							1					
16	Robbery					1					2		
17	Rape												
18	Railway Holdup												1
19	Sodomy											1	
20	**Total Committed during 1905**	8			10	15	7	6	1	9	10	15	1
21	**Total in Confinement Dec 31, 1904**	11	2	18	16	49	20	13	17	25	24	16	11
22	**Grand Total**	19	2	18	26	64	27	19	18	34	34	31	12
23	**Discharged by Expiration**	5		6	10	16	12	7	5	14	9	7	1
24	Discharged by Commutation												
25	Discharged by Pardon		1							1	1		
26	**Discharged by Order of Court**												
27	Discharged by Insane			1									
28	Discharged by Death								2				
29	**Total Discharges**	5	1	7	10	16	12	7	7	15	10	7	1
30	**Total in Confinement Dec 31, 1905**	14	1	11	16	48	15	12	11	19	24	24	11

STATISTICS—1905

WERE COMMITTED TO THE MONTANA STATE PRISON AT DEER LODGE DURING YEAR 1905.

Jefferson	Lewis and Clarke	Madison	Meagher	Missoula	Park	Powell	Ravalli	Rosebud	Silver Bow	Sweet Grass	Teton	Valley	Yellowstone	U. S. Court	Total.	Percentage of commitments during 1905, classified by crime	Tracing Number.
	1	2		1				1	1				1		19	10.44	1
2	4	2		7	5		2	1	5				3		40	21.38	2
		1													2	1.10	3
									1						1	.55	4
														4	4	2.20	5
														2	2	1.10	6
						1									1	.55	7
	1			3	1				1	1	3	1	3		26	14.29	8
	1	1	1	1	2			3	4	4	1		1		52	28.58	9
								2							5	2.75	10
	1							1	1						6	3.29	11
		2							1			2			8	4.40	12
											3				3	1.64	13
										1					1	.55	14
															1	.55	15
									2	1					6	3.29	16
	1								2						3	1.64	17
															1	.55	18
															1	.55	19
2	9	8	1	12	8	1	2	8	18	7	7	3	8	6	182	100.00	20
	43	12	1	17	31	1	5	2	80	11	4	13	20	5	467		21
2	52	20	2	29	39	2	7	10	98	18	11	16	28	11	649		22
	9	1		13	7			6	25	3	1	5	4	3	169		23
	1														1		24
	2			1	1		1								8		25
									2						2		26
	1														2		27
		1							1			1			5		28
	13	2		14	8		1	0	28	3	1	6	4	3	187		29
2	39	18	2	15	31	2	6	4	70	15	10	10	24	8	462		30

PENITENTIARY STATISTICS – 1896 to 1905

Statement Showing the Number of Commitments to the State Penitentiary by Counties From 1896 to 1905 Inclusive; Also the Total Number of Prisoners Discharged Each Year

Tracing Number	YEAR	Beaverhead	Broadwater	Carbon	Cascade	Chouteau	Custer	Dawson	Deer Lodge	Fergus	Flathead	Gallatin	Granite	Jefferson	Lewis & Clarke	Madison	Meagher	Missoula	Park	Powell
1	1896	2	....	2	27	11	14	.....	13	.....	10	8	3	9	12	2	1	15	2	.....
2	1897	5	1	4	17	12	14	1	17	2	5	6	3	7	25	8	.....	8	1	.....
3	1898	3	....	3	9	7	20	3	33	4	18	6	1	4	13	6	1	12	4	.....
4	1899	5	....	.....	12	15	3	1	14	5	9	4	.....	2	13	.....	3	9	7	.....
5	1900	.....	2	4	15	17	2	2	14	6	6	....	1	5	22	3	2	6	9	.....
6	1901	7	1	2	20	17	4	5	11	10	13	1	.....	4	18	4	3	9	4	.....
7	1902	5	1	5	14	26	3	8	11	13	7	4	1	5	22	2	1	14	7	3
8	1903	8	1	8	13	23	8	6	1	9	7	6	1	1	6	4	1	13	9	.....
9	1904	2	....	5	2	16	12	6	9	13	11	11	8	0	6	1	2	16	15	.....
10	1905	8	....	.....	10	15	7	6	1	9	10	15	1	2	9	8	1	12	8	1
11	Total Committed 1896 to 1905 incl.	45	6	33	139	159	87	38	124	71	96	61	19	39	146	38	15	114	66	4
12	Total in Confinement Dec. 31, 1895	12	....	2	38	21	19	1	21	5	6	7	3	9	40	5	6	19	12	.....
13	Grand Total	57	6	35	177	180	106	39	145	76	102	68	22	48	186	43	21	133	78	4

PENITENTIARY STATISTICS—1895 to 1905—Continued

Tracing Number	YEAR	Ravalli	Rosebud	Silver Bow	Sweet Grass	Teton	Valley	Yellowstone	U. S. Court	Total	Discharged by Reason of: Expiration of Sentence	Diminution of Sentence	Pardon	Order of Court	Escaped	Died	Transferred to Insane Asylum	Total Discharged	Tracing Number
1	1896	3		28	3	1	1	2		169	149		27	2	1	3		182	1
2	1897	2		18	6	1	2	9		174	39	90	18	3	1			151	2
3	1898			19	6	3	5	13		197	33	101	28	4	4	3		173	3
4	1899			29		3	3	6		148	10	101	10	1		4	1	177	4
5	1900	1		23	1		7	8	2	158	58	66	29	3				156	5
6	1901	3		42	3	6	4	13	6	209	103	9	9	5	4	5		135	6
7	1903		6	26	4	1	4	14	2	209	133	1	8	2		3		147	7
8	1903	1	2	22	2	8	4	9	1	174	164	1	18		4		1	188	8
9	1904	3	2	20	5	2	12	10	3	192	175	1	10	4			2	192	9
10	1905	2	8	18	7	7	3	8	6	182	169		8	2		5	2	187	10
11	Total Committeed 1896 to 1905 Inclusive	24	18	245	37	32	45	92	19	1,812	1,083	371	165	26	14	23	6	1,688	11
12	Total in Confinement Dec. 31, 1895	7		69	2	7	7	20		338									12
13	Grand Total	31	18	314	39	39	52	112	19	2,150									13

INSANE ASYLUM STATISTICS

STATEMENT OF COMMITMENTS TO THE STATE INSANE ASYLUM AT WARM SPRINGS DURING THE YEAR 1904.

Tracing Number	COUNTIES	Primary mental deterioration	Mania	Melancholia	Primary Dementia	Secondary Dementia	Terminal Dementia	Primary Confusional Insanity	Secondary Confusional Insanity	Chronic Confusional Insanity	Primary Delusional Insanity	Secondary Delusional Insanity	Chronic Delusional Insanity	Paranoia	Epileptic	Periodical Insanity	Traumatic Insanity	Homicidal Insanity
1	Beaverhead					1	1								1			
2	Broadwater										2							
3	Carbon	1																
4	Cascade	1	2	3		1					2				4			
5	Chouteau		1								2							
6	Custer																	
7	Dawson			2								1						
8	Deer Lodge		1	1	1					1	6		1					
9	Fergus		1		1						1							
10	Flathead	1				1					3			1	1			
11	Gallatin			3							1							
12	Granite												1					
13	Jefferson	1	1								1				1			
14	Lewis and Clark	2	1	3	1						2							
15	Madison			2				1										
16	Meagher	1		1				1										
17	Missoula	7	1					1			3							
18	Park																	
19	Powell	2		1							1	1		1				
20	Ravalli			1	1													
21	Rosebud			1														
22	Silver Bow	5	5	4	4				1		5	3		1	1			

INSANE ASYLUM STATISTICS.

STATEMENT OF COMMITMENTS TO THE STATE INSANE ASYLUM AT WARM SPRINGS DURING THE YEAR 1904—Continued.

Tracing Number.	COUNTIES	Primary Mental Deterioration	Mania	Melancholia	Primary Dementia	Secondary Dementia	Terminal Dementia	Primary Confusional Insanity	Secondary Confusional Insanity	Chronic Confusional Insanity	Primary Delusional Insanity	Secondary Delusional Insanity	Chronic Delusional Insanity	Paranoia	Epileptic	Periodical Insanity	Traumatic Insanity	Homicidal Insanity
23	Sweet Grass			1														
24	Teton			2							2							
25	Valley			1							1				1			
26	Yellowstone	1		1			1				1							
27	Blackfeet Indian Reservation																	
28	Flathead Indian Reservation																	
29	Ft. Peck Indian Reservation																	
30	Ft. Belknap Indian Reservation																	
31	State Penitentiary					1												
32	United States Penitentiary												1					
33	Total Committed during 1904, Classified by Disease	22	13	27	8	4	2	3	1	1	30	5	3	3	9			
34	Total in Asylum Dec. 31, 1903, Classified by Disease	14	22	97	13	9		3	1	15	86	39	121	11	29			
35	Grand Total Confined	36	35	124	21	13	2	6	2	16	116	44	124	14	38			
36	Number Discharged, 1904	17	6	19	4				1		15	2	1	1	4			
37	Number Escaped, 1904	1	1	7		1					5	1	1					
38	Number Died, 1904		7	2	5	3	2			1	4	3	3		6			
39	Total Discharged, Escaped and Died, 1904	18	14	28	9	4	2		1	1	24	6	5	1	10			
40	Total Patients in Asylum Dec. 31, 1904, Classified by Disease	18	21	96	12	9		6	1	15	92	38	119	13	28			

INSANE ASYLUM STATISTICS.

STATEMENT OF COMMITMENTS TO THE STATE INSANE ASYLUM AT WARM SPRINGS DURING THE YEAR 1904—Continued.

Tracing Number	COUNTIES	Stuperous Insanity	Alcoholic Dementia	Syphilitic Dementia	Paretic Dementia	Hysterical Insanity	Senile Dementia	Imbecility	Idiocy	Acute Mania	Not Insane	Total Committed During the Year 1904	Per. of commitments from each county	No. discharged recovered	No. discharged improved	Number died	Number escaped	Total number in asylum Dec. 31, 1904	Tracing number
1	Beaverhead							1				4	2.33	1	1	3		16	1
2	Broadwater						2					4	2.33	1	1			4	2
3	Carbon						1	1				3	1.74	3				8	3
4	Cascade						1	1				15	8.72	2	2	1		48	4
5	Chouteau	1					1		1			6	3.49	1	1	2	1	17	5
6	Custer							1	1			2	1.16	1	1	2		11	6
7	Dawson											3	1.74	1			2	7	7
8	Deer Lodge								1			9	5.23	3	2	4		62	8
9	Fergus											3	1.74	3		1	1	14	9
10	Flathead				1							8	4.65	2	1	1	1	22	10
11	Gallatin	1					4					9	5.23	1		1	1	33	11
12	Granite						1					2	1.16			2		4	12
13	Jefferson						1					5	2.91	1		2	2	16	13
14	Lewis and Clark				1	1						11	6.40	4	2	7		63	14
15	Madison						1					4	2.33		1	1		11	15
16	Meagher						1					4	2.33	1		1	1	13	16
17	Missoula	1					2		1			16	9.30	5	6	5		52	17
18	Park										1	1	.58			2	1	11	18
19	Powell											6	3.49	5			1	9	19
20	Ravalli							1			1	4	2.33	1	1			8	20
21	Rosebud											1	.58			1	1	1	21
22	Silver Bow	1			2		1					33	19.19	11	8	10	3	101	22

INSANE ASYLUM STATISTICS.

STATEMENT OF COMMITMENTS TO THE STATE INSANE ASYLUM AT WARM SPRINGS DURING THE YEAR 1904—Concluded.

Tracing Number	COUNTIES	Stuperous Insanity	Alcoholic Dementia	Syphilitic Dementia	Paretic Dementia	Hysterical Insanity	Senile Dementia	Imbecility	Idiocy	Acute Mania	Not Insane	Total Committed During the Year 1904	Pct. of Commitments From Each County	No Discharged Recovered	No. Discharged Improved	Number Died	Number Escaped	Total Number in Asylum Dec. 31, 1904	Tracing Number
23	Sweet Grass											1	.58		1	1	1	6	23
24	Teton						2					6	3.49	2	1	2	1	11	24
25	Valley											3	1.74				1	3	25
26	Yellowstone					1	1					6	3.49	1	1	1	1	18	26
27	Blackfeet Indian Reservation																		27
28	Flathead Indian Reservation																		28
29	Ft. Peck Indian Reservation																		29
30	Ft. Belknap Indian Reservation																		30
31	State Penitentiary										1	3	1.74		1		1	2	31
32	United States Penitentiary																	2	32
33	Total Committed during 1904, Classified by Disease	4			4	2	19	5	4		3	172	100.00	50	31	50	20	573	33
34	Total in Asylum Dec. 31, 1903, Classified by Disease	10		1	6	4	16	11	44			552							34
35	Grand Total Confined	14		1	10	6	35	16	48		3	724							35
36	Number Discharged, 1904				1	1	3	2	2		2	81							36
37	Number Escaped, 1904	2									1	20							37
38	Number Died, 1904	1			4		8		1			50							38
39	Total Discharged, Escaped and Died, 1904	3			5	1	11	2	3		3	151							39
40	Total Patients in Asylum Dec 31, 1904, Classified by Disease	11		1	5	5	24	14	45			573							40

INSANE ASYLUM STATISTICS.

STATEMENT OF COMMITMENTS TO THE STATE INSANE ASYLUM AT WARM SPRINGS DURING THE YEAR 1905.

Tracing Number	COUNTIES	Primary mental deterioration	Mania	Melancholia	Primary dementia	Secondary dementia	Terminal dementia	Primary confusional insanity	Secondary confusional insanity	Chronic confusional insanity	Primary delusional insanity	Secondary delusional insanity	Chronic delusional insanity	Paranoia	Epileptic	Periodical Insanity	Traumatic insanity	Homicidal insanity	Stuperous Insanity
1	Beaverhead	1																	
2	Broadwater		1								1								
3	Carbon	1	1	1										1					
4	Cascade		1	2								2							1
5	Chouteau										1								
6	Custer																		
7	Dawson			1															
8	Deer Lodge	2		2	1						3	1							
9	Fergus	2	1	3															
10	Flathead		1	1							3								
11	Gallatin	1		3	1						2	1			3				
12	Granite	3		1							2								
13	Jefferson		2	2															
14	Lewis and Clark	2	2	1							6	1			1				
15	Madison		1	2								1							
16	Meagher	1																	
17	Missoula		2	6				1			2				1				
18	Park		3			1	1				1								
19	Powell	1	1								2								
20	Ravalli			2							1	1		1	1				
21	Rosebud			1															
22	Sanders																		

INSANE ASYLUM STATISTICS.

STATEMENT OF COMMITMENTS TO THE STATE INSANE ASYLUM AT WARM SPRINGS DURING THE YEAR 1905 Continued.

Tracing Number	COUNTIES	Primary Mental Deterioration	Mania	Melancholia	Primary Dementia	Secondary Dementia	Terminal Dementia	Primary Confusional Insanity	Secondary Confusional Insanity	Chronic Confusional Insanity	Primary Delusional Insanity	Secondary Delusional Insanity	Chronic Delusional Insanity	Paranoia	Epileptic	Periodical Insanity	Traumatic Insanity	Homicidal Insanity	Stuperous Insanity
23	Silver Bow	4	5	5	4	.....	.....	1	.....	.....	9	2	1	.....	2	.....	.....	.....	2
24	Sweet Grass	....	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....
25	Teton	....	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....
26	Valley	....	.....	.....	1	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....
27	Yellowstone	....	2	1	.....	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....
28	State Penitentiary	....	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	1	.....	1	.....	.....	.....	.....
29	U. S. Penitentiary	....	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....
30	Total Committed during 1905, Classified by Disease	18	23	34	7	1	1	2	.....	.....	39	9	2	2	9	.....	.....	.....	3
31	Total in Asylum Dec 31, 1904, Classified by Disease	18	21	96	12	9	.....	6	1	15	92	38	119	13	28	.....	.....	.....	11
32	Grand Total Confined	36	44	130	19	10	1	8	1	15	131	47	121	15	37	.....	.....	.....	14
33	Number Discharged, 1905	15	17	20	4	2	.....	.....	1	1	18	2	2	.....	3	.....	.....	.....	3
34	Number Escaped, 1905	3	1	5	1	.....	.....	.....	.....	.....	2	1	2	1	1	.....	.....	.....	1
35	Number Died, 1905	....	3	3	5	.....	1	.....	.....	.....	5	2	5	1	3	.....	.....	.....	.....
36	Total Discharged, Escaped and Died, 1905	18	21	28	10	3	1	.....	1	1	25	5	9	2	7	.....	.....	.....	4
37	Total Patients in Asylum Dec. 31, 1905, Classified by Disease	18	23	102	9	7	.....	8	.....	14	106	42	112	13	30	.....	.....	.....	10

INSANE ASYLUM STATISTICS.

STATEMENT OF COMMITMENTS TO THE STATE INSANE ASYLUM AT WARM SPRINGS DURING THE YEAR 1905—Continued.

Tracing Number	COUNTIES	Alcoholic dementia	Syphilitic dementia	Paretic dementia	Hysterical Insanity	Senile dementia	Imbecility	Idiocy	Acute mania	Under observation	Not Insane	Total committed during the year 1905	Pct of commitments from each county	No. discharged recovered	No. discharged improved	Number died	Number escaped	Total number in asylum Dec. 31, 1905	Tracing number
1	Beaverhead						1					2	1.09	3			1	15	1
2	Broadwater											2	1.09	1				5	2
3	Carbon					2						6	3.28	2	1	2	1	8	3
4	Cascade					1				1		10	5.46	4	3	2	1	48	4
5	Chouteau					1						2	1.09		1	1	1	16	5
6	Custer															2		9	6
7	Dawson											1	.55				1	7	7
8	Deer Lodge											9	4.92	3	2	3		64	8
9	Fergus					2						8	4.37	2	1	6		12	9
10	Flathead					4						9	4.88	6		5	1	20	10
11	Gallatin					1		1				13	7.12	1		1	4	40	11
12	Granite					1						7	3.83	2		2		7	12
13	Jefferson											4	2.19	2	2			17	13
14	Lewis and Clark			1		1						15	8.20	4	1	6	2	54	17
15	Madison											4	2.19	2			1	12	15
16	Meagher					2						3	1.64	1	1	2	1	11	16
17	Missoula			1		2						15	82.0	4	1	6	2	54	17
18	Park											6	3.28	3	2	2		10	18
19	Powell					1	1					6	3.28	2	3	1	1	8	19
20	Ravalli				1							7	3.83		3	2		11	20
21	Rosebud											1	.55					2	21
22	Sanders																		22

INSANE ASYLUM STATISTICS

STATEMENT OF COMMITMENTS TO THE STATE INSANE ASYLUM AT WARM SPRINGS DURING THE YEAR 1905—Concluded.

Tracing Number	COUNTIES	Alcoholic Dementia	Syphilitic Dementia	Paretic Dementia	Hysterical Insanity	Senile Dementia	Imbecility	Idiocy	Acute Mania	Under Observation	Not Insane	Total committed during the year 1905	Pct. of commitments from each County	No. Discharged Recovered	No. Discharged Improved	Number died	Number Escaped	Total Number in Asylum Dec. 31, 1905	Tracing Number
23	Silver Bow	....	.....	.....	1	5	.....	.....	.....	.....	.....	41	22.40	8	13	12	3	103	23
24	Sweet Grass	....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.55	1	.....	.....	.....	7	24
25	Teton	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11	25
26	Valley	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.55	2	.....	1	.....	1	26
27	Yellowstone	....	.....	.....	.....	1	.....	.....	.....	.....	.....	8	4.37	1	1	3	1	19	27
28	State Penitentiary	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1.09	.....	.....	.....	.....	4	28
29	U. S. Penitentiary	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	29
30	Total Committed during 1905, Classified by Disease	....	.....	2	2	25	2	1	.....	1	.....	183	100.00	54	41	55	19	587	30
31	Total in Asylum Dec 31, 1904, Classified by Disease	....	1	5	5	24	14	45	.....	.....	.....	573	.....	.....	.....	.....	.....	.....	31
32	Grand Total Confined	....	1	7	7	49	16	46	.....	1	.....	756	.....	.....	.....	.....	.....	.....	32
33	Number Discharged, 1905	....	.....	.....	2	2	1	1	.....	.....	.....	95	.....	.....	.....	.....	.....	.....	33
34	Number Escaped, 1905	....	.....	.....	.....	1	.....	.....	.....	.....	.....	19	.....	.....	.....	.....	.....	.....	34
35	Number Died, 1905	....	1	3	1	21	.....	1	.....	.....	.....	55	.....	.....	.....	.....	.....	.....	35
36	**Total Discharged, Escaped and Died, 1905**	....	1	3	3	24	1	2	.....	.....	.....	169	.....	.....	.....	.....	.....	.....	36
37	**Total Patients in Asylum Dec. 31, 1905, Classified by Disease**	....	.....	4	4	25	15	44	.....	1	.....	587	.....	.....	.....	.....	.....	.....	37

REVENUE FROM LICENSES

REVENUE FROM LICENSES DURING THE FISCAL YEAR ENDED NOVEMBER 30, 1904, AS REPORTED BY COUNTY TREASURERS.

COUNTIES	Assayers	Attorneys*	Auctioneers	Bankers	Billiard Tables	Bowling Alleys	Brewers	Building Manufacturers	Butchers	Cigarette Sellers	Common Carriers	Dentists*
Beaverhead					$15 00	$15 00	$55 00		$108 00	$60 00	$50 00	$20 00
Broadwater		$85 00		$80 00	44 50	15 00			39 00			
Carbon		30 00	5 00	130 00	90 00	20 00	90 00		42 00			
Cascade		310 00	5 00	240 00	307 50	80 00	600 00	40 00	276 00			165 00
Chouteau		160 00			67 50	10 00			45 00			25 00
Custer		140 00		10 00	176 25	10 00			45 00			35 00
Dawson		55 00		155 00	82 50	40 00			72 00			25 00
Deer Lodge		170 00	20 00	405 00	322 50	15 00	180 00	40 00	306 00			75 00
Fergus		191 25	15 00	90 00		21 00	90 00		105 30			56 50
Flathead		255 00	25 00	100 00	28 00		67 50		54 00			100 00
Gallatin		140 00	35 00	110 00	176 25	20 00	112 50		111 00	250 00		75 00
Granite		50 00		40 00	67 50		60 00		165 00			60 00
Jefferson		85 00		135 00		15 00			215 00			
Lewis and Clark		735 00	10 00	760 00	210 00		525 00	80 00	341 00	330 00		200 00
Madison		105 00		250 00	146 25	5 00	40 00		171 00			55 00
Meagher		85 00				10 00			81 00			
Missoula		20 00		30 00					123 00	160 00		
Park		110 00		100 00	30 00	70 00			66 00	240 00		75 00
Powell		40 00		120 00			60 00		108 00			5 00
Ravalli		20 00	15 00		26 25	20 00						10 00
Rosebud		30 00		70 00	71 25	5 00			18 00			15 00
Silver Bow		1,070 00	70 00	920 00	320 00	80 00	840 00	140 00	160 00	1,190 00		225 00
Sweet Grass		60 00			37 50						20 00	
Teton		85 00	10 00	40 00	97 50				39 00			10 00
Valley		65 00		195 00	82 50				96 00			15 00
Yellowstone		50 00		120 00	97 50	35 00	150 00			50 00		
Total		$4,146 25	$210 00	$4,100 00	$2,496 26	$486 00	$2,870 00	$300 00	$2,786 30	$2,280 00	$70 00	$1,246 50
Total for 1903		4,267 00	155 00	4,850 00	2,613 50		2,919 75	230 00	2,474 00	2,120 00	237 50	1,680 50
Increase			$55 00			$486 00		$70 00	$312 30	$160 00		
Decrease		120 75		750 00	117 24		49 75				167 50	434 00
Percentage paid by each business, 1904		.63	.03	.63	.38	.08	.45	.05	.43	.35	.01	.19
Total licenses collected in 1894		*4,603 00							2,962 00			

* Includes physicians and dentists.

REVENUE FROM LICENSES.

REVENUE FROM LICENSES—1904—Continued.

COUNTIES	Feed Corrals.	Hotels, Restaurants, Lodging Houses.	Insurance, Real Estate, Loans, Etc.	Intelligence Offices	Laundries	Liquor Selling At Retail	Liquor Selling at Wholesale	Livery, Hacks, Express, etc.	Merchants, excluding Liquors at Wholesale	Merry-go-Rounds	Oleomargarine Butterine	Pawnbrokers and Peddlers
Beaverhead		$265 00	$95 00		$50 00	$12,030 00		$172 00	$1,228 00			
Broadwater		140 00				5,000 00		35 00	348 00	20 00		20 00
Carbon			75 00			13,560 00		94 00	922 00	30 00		52 50
Cascade	56 00	930 00	313 35		140 00	39,410 00		720 00	4,578 00		4 10	245 00
Chouteau		395 00	20 00		250 00	20,400 00		90 00	1,122 00			125 00
Custer	16 00	145 00	110 00		135 00	10,200 00		110 00	693 00	30 00		
Dawson		175 00	190 00			6,510 00		118 00	827 00			25 00
Deer Lodge		490 00	100 00		170 00	27,550 00		414 00	2,310 00	50 00		117 50
Fergus		381 00	75 00		166 00	19,278 00		319 50	2,045 10	30 00		228 50
Flathead	232 00	395 00	150 00		180 00	21,668 00		76 00	1,900 00			145 00
Gallatin	40 00	225 00	255 00		185 00	15,080 00		236 00	1,854 00	60 00		80 00
Granite		205 00	25 00		70 00	9,000 00		232 00	867 00			67 50
Jefferson		205 00	105 00		40 00	9,450 00		132 00	690 00			20 00
Lewis and Clark		895 00	445 00	50 00	395 00	43,210 00		692 00	5,978 00			727 50
Madison		380 00			60 00	15,800 00		215 00	1,485 00			150 00
Meagher		70 00	20 00		45 00	5,550 00		95 00	462 00			
Missoula		60 00	150 00			25,825 00		72 00	1,500 00	50 00		72 50
Park	48 00	215 00	95 00		225 00	17,040 00		90 00	1,426 00	10 00		37 50
Powell		50 00			20 00	7,550 00		77 00	819 00			60 00
Ravalli		82 50	40 00		80 00	175 00		120 00	1,121 00	10 00		
Rosebud		60 00	30 00			3,100 00		94 00	405 00	10 00		
Silver Bow	24 00	3,715 00	720 00	50 00	1,225 00	158,050 00		600 00	118,878 00			2,257 50
Sweet Grass		125 00	85 00		90 00	3,100 00		55 00	504 00			
Teton		180 00			40 00	8,150 00		243 00	431 00		60	42 50
Valley		220 00			40 00	8,950 00		160 00	591 00			37 50
Yellowstone		220 00	105 00	95 00	130 00	17,500 00		220 00	1,368 00	50 00		25 00
Total	$416 00	10,103 50	$3,203 35	$195 00	$3,716 00	$523,136 00		$5,371 50	$54,752 10	$350 00	$4 60	$4,536 00
Total for 1903		18,754 50	2,565 50	290 00	4,671 00	507,579 00		6,437 70	61,622 30			5,707 00
Increase	416 00		637 85			15,557 00				$350 00	$4 60	
Decrease		8,651 00		95 00	955 00			1,066 20	7,270 20			1,171 00
Percentage paid by each business, 1904	.06	1.56	.49	.03	.54	80.79		.83	8.40	.05	0.00	.70
Total licenses collected in 1894		$3,927 00	$1,172 00		$1,810 00	$246,615 00		$4,191 00	$52,929 00			$3,625 00

REVENUE FROM LICENSES.

REVENUE FROM LICENSES 1904—Concluded.

COUNTIES	Pools on Races	Power and Light Co's	Photographers	Physicians and Surgeons	Street Railways	Shows, Circuses, etc., excluding Theatres	Shooting Galleries	Telegraph and Telephones	Theatres	Water Companies	All Others	Total	Percentage Total licenses collected by each County
Beaverhead		$50 00		$45 00					$20 00		$20 00	$4,298 00	2.20
Broadwater			5 00	45 00		3 00		24 75				5,904 25	.90
Carbon			35 00			135 00		9 75	25 00		130 00	15,475 25	2.38
Cascade		250 00	105 00	390 00	200 00	250 00	30 00	335 25	100 00	125 00	255 00	50,460 10	7.77
Chouteau				75 00		6 00	30 00	41 25				22,861 75	3.52
Custer			45 00	70 00		150 00	15 00				110 00	12,245 25	1.89
Dawson				40 00		10 00		66 75	124 00			8,585 25	1.32
Deer Lodge		100 00	20 00	195 00	200 00	40 00	15 00		200 00	200 00		33,705 00	5.19
Fergus			25 00	266 00			15 00	131 25			10 00	23,532 40	3.63
Flathead		100 00	45 00	220 00				134 25			10 00	23,542 40	3.63
Gallatin		100 00	25 00	175 00	100 00	150 00	15 00		100 00		35 00	19,844 75	3.06
Granite			10 00	85 00					6 00		20 00	11,030 00	1.70
Jefferson				60 00		12 00		33 75				11,197 75	1.72
Lewis and Clark		300 00	95 00	325 00	150 00	250 00	15 00	483 00	100 00	400 00	175 00	57,762 50	8.90
Madison				185 00		4 00		52 50		150 00		19,253 75	2.96
Meagher				85 00		14 00		3 00			27 00	6,547 00	1.00
Missoula		50 00		10 00		70 00			855 00	50 00		29,097 50	4.48
Park		50 00	40 00	135 00		178 00				100 00		20,380 50	3.14
Powell				75 00		32 00				50 00		9,066 00	1.40
Ravalli			30 00	40 00		25 00	15 00			50 00	10 00	1,889 76	.29
Rosebud			5 00	45 00					12 00		45 00	4,015 25	.62
Silver Bow		400 00	95 00	995 00	200 00	125 00	75 00	1,040 25	300 00	600 00	4,668 37	199,039 12	30.74
Sweet Grass				70 00				20 25			10 00	4,176 75	.64
Teton			15 00	55 00					3 00			9,431 60	1.45
Valley				105 00					24 00		20 00	10,541 00	1.62
Yellowstone			20 00	160 00		65 00	15 00	326 25	475 00		5 00	21,281 75	3.28
Total		$1,400 00	615 00	$3,981 00	$850 00	$1,619 00	240 00	$2,720 25	$2,394 00	$1,775 00	$5,540 37	$647,509 98	100.00
Total for 1903		1,787 50	830 00	4,433 00	1,061 25			5,008 49	4,126 00	1,800 00	7,656 25	609,928 07	
Increase						$1,619 00	240 00					$37,581 91	
Decrease		387 50	215 00	452 00	211 25			$2,288 24	$1,732 00	$25 00	$2,115 88		
Percentage paid by each business, 1904		.22	.09	.61	.13	.25	.04	.41	.37	.27	.86	100.00	
Total licenses collected in 1894		$2,543.33		(a)					$898 00	$6,204 00		(b)$369,674 77	

(a) See Attorneys.

(b) Includes $37,894.44 for gambling which is now discontinued.

REVENUE FROM LICENSES

REVENUE FROM LICENSES DURING THE FISCAL YEAR ENDED NOVEMBER 30, 1905, AS REPORTED BY COUNTY TREASURERS.

COUNTIES	Abstractors	Attorneys	Auctioneers	Bankers	Billiard Tables	Bottling Works	Bowling Alleys	Brewers	Building Manufacturers	Butchers	Cigarette Selling	Common Carriers
Beaverhead	.....	.....	.....	.....	$7 50	.....	.....	$50 00	.....	$132 00	.....	$10 00
Broadwater	.....	40 00	.....	80 00	44 50	.....	.....	.....	.....	42 00	.....	.....
Carbon	.....	145 00	5 00	190 00	75 00	100 00	.....	90 00	.....	60 00	10 00	.....
Cascade	.....	500 00	.....	215 00	232 50	.....	.....	750 00	30 00	306 00	.....	.....
Chouteau	.....	95 00	5 00	60 00	71 25	.....	30 00	80 00	.....	51 00	.....	.....
Custer	.....	75 00	.....	40 00	176 25	.....	10 00	.....	.....	81 00	.....	.....
Dawson	.....	80 00	.....	145 00	67 50	.....	20 00	.....	.....	66 00	.....	.....
Deer Lodge	.....	165 00	.....	380 00	348 75	.....	30 00	255 00	40 00	285 00	90 00	.....
Fergus	.....	210 00	45 00	65 00	.....	.....	20 00	105 00	.....	72 00	.....	.....
Flathead	20 00	275 00	20 00	90 00	7 50	.....	.....	90 00	.....	138 00	.....	.....
Gallatin	.....	285 00	15 00	130 00	97 50	.....	50 00	187 50	.....	165 00	220 00	.....
Granite	.....	85 00	5 00	40 00	45 00	.....	.....	60 00	.....	72 00	.....	.....
Jefferson	.....	190 00	.....	125 00	.....	.....	20 00	135 00	.....	117 00	.....	.....
Lewis and Clark	.....	755 00	.....	710 00	142 50	.....	.....	435 00	80 00	312 00	249 00	.....
Madison	.....	90 00	.....	210 00	86 25	.....	.....	55 00	.....	138 00	.....	.....
Meagher	.....	90 00	.....	.....	.....	.....	.....	.....	.....	99 00	.....	.....
Missoula	.....	65 00	5 00	50 00	.....	.....	.....	.....	.....	153 00	290 00	.....
Park	.....	100 00	.....	110 00	82 50	.....	10 00	.....	.....	30 00	60 00	.....
Powell	.....	70 00	.....	160 00	.....	.....	.....	60 00	.....	123 00	.....	$15 00
Ravalli	.....	25 00	25 00	.....	22 50	.....	.....	.....	.....	96 00	.....	.....
Rosebud	.....	45 00	.....	40 00	71 25	.....	15 00	.....	.....	18 00	.....	.....
Silver Bow	.....	1,125 00	20 00	880 00	331 25	.....	80 00	720 00	160 00	180 00	1,570 00	.....
Sweet Grass	.....	45 00	.....	.....	45 00	.....	.....	.....	.....	6 00	.....	10 00
Teton	.....	115 00	5 00	50 00	168 75	.....	.....	.....	.....	42 00	.....	.....
Valley	.....	115 00	.....	280 00	56 25	.....	.....	.....	.....	90 00	.....	.....
Yellowstone	.....	50 00	.....	205 00	.....	.....	40 00	300 00	.....	96 00	.....	.....
Total, 1905	$20 00	$4,835 00	$150 00	$4,255 00	$2,179 50	$100 00	$325 00	$3,372 50	$310 00	$2,940 00	$2,489 00	$65 00
Total for year 1904	.....	4,146 25	210 00	4,100 00	2,496 26	.....	480 00	2,870 00	300 00	2,786 38	2,280 00	75 00
Increase	$20 00	$689 00	.....	$155 00	.....	$100 00	.....	$502 50	$10 00	$153 70	$209 00	.....
Decrease	.....	.....	$60 00	.....	$316 76	.....	$161 00	.....	.....	.....	.....	$10 00
Percentage paid by each business, 1904	0.00	.71	.02	.62	.32	.01	.04	.50	.04	.43	.37	.01
Total licenses collected, 1895	.....	$2,930 65	$200 10	$518 00	$2,458 32	.....	.....	$3,487 85	$91 00	$2,840 88	$4,698 00	$397 75

REVENUE FROM LICENSES.

REVENUE FROM LICENSES—1905—Continued.

COUNTIES	Dentists	Feed Corrals	Ferries	Hotels, Restaurants, Lodging Houses	Insurance, Real Estate, Loans, etc.	Intelligence Offices	Laundries	Liquor Selling Retail and Wholesale	Livery, Hacks, Express, etc.	Merchants	Merry-go-Rounds
Beaverhead	$25 00	.....	.....	$220 00	$125 00	.....	$140 00	$12,835 00	$181 00	$1,235 00	.....
Broadwater	.....	.....	.....	165 00	.....	.....	.....	4,975 00	125 00	522 00	10 00
Carbon	20 00	.....	.....	110 00	120 00	.....	15 00	14,082 00	179 00	999 00	.....
Cascade	280 00	32 00	.....	925 00	295 85	.....	160 00	45,646 00	668 50	5,017 00	.....
Chouteau	45 00	.....	.....	471 00	20 00	.....	200 00	23,464 00	125 00	1,416 00	.....
Custer	40 00	16 00	.....	130 00	110 00	.....	95 00	8,625 00	90 00	711 00	.....
Dawson	55 00	100 00	.....	110 00	110 00	.....	30 00	6,312 00	50 00	530 00	.....
Deer Lodge	70 00	.....	.....	470 00	95 00	.....	170 00	30,820 00	474 50	2,617 00	.....
Fergus	60 50	.....	.....	396 00	177 00	.....	186 50	18,174 00	306 50	2,096 50	30 00
Flathead	115 00	208 00	36 00	310 00	180 00	.....	120 00	20,828 00	7 00	1,905 00	.....
Gallatin	130 00	32 00	.....	255 00	370 00	.....	280 00	15,335 00	327 00	2,511 00	.....
Granite	55 00	.....	.....	145 00	45 00	.....	40 00	7,610 00	129 00	870 00	.....
Jefferson	30 00	.....	.....	240 00	135 00	10 00	20 00	11,965 00	232 00	794 00	.....
Lewis and Clark	200 00	.....	.....	715 00	450 00	40 00	355 00	48,776 00	848 00	6,250 30	.....
Madison	80 00	.....	.....	270 00	.....	.....	40 00	14,245 00	255 00	1,419 00	.....
Meagher	.....	.....	.....	50 00	60 00	.....	30 00	5,475 00	120 00	438 00	.....
Missoula	15 00	88 00	.....	190 00	80 00	.....	.....	32,340 00	195 00	2,578 00	100 00
Park	75 00	32 00	.....	340 00	110 00	.....	260 00	20,565 00	128 00	1,605 00	50 00
Powell	10 00	.....	.....	90 00	.....	.....	20 00	7,240 00	58 00	699 00	.....
Ravalli	.....	.....	.....	165 00	50 00	.....	70 00	.....	90 00	2,253 00	10 00
Rosebud	15 00	.....	25 00	95 00	40 00	.....	.....	3,485 00	67 00	390 00	.....
Silver Bow	295 00	.....	.....	4,065 00	1,245 00	80 00	1,220 00	143,604 00	550 00	19,161 00	.....
Sweet Grass	35 00	.....	.....	120 00	75 00	.....	60 00	3,475 00	65 00	486 00	3 00
Teton	50 00	.....	.....	285 00	.....	.....	40 00	8,785 00	200 00	834 00	.....
Valley	20 00	.....	20 00	215 00	165 00	.....	60 00	10,720 00	120 00	682 50	.....
Yellowstone	60 00	.....	.....	197 00	150 00	90 00	155 00	24,095 00	267 50	1,460 00	.....
Total, 1905	$1,780 50	$508 00	$81 00	$10,754 00	$4,207 85	$220 00	$3,766 50	$543,476 00	$5,858 00	$59,179 30	$203 00
Total for year 1904	1,246 50	416 00	.....	10,103 50	3,203 35	195 00	3,716 00	523,136 00	5,371 50	54,352 10	350 00
Increase	$534 00	$92 00	$81 00	$650 50	$1,004 50	$25 00	$50 50	$20,340 00	$486 50	$5,127 20	.....
Decrease	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	147 00
Percentage paid by each business, 1904	.26	.07	.01	1.58	.62	.03	.55	79.88	.86	8.74	.03
Total licenses collected, 1895	$1,034 47	.....	.....	$6,329 31	$1,681 51	$65 65	$2,341 72	$339,341 93	$5,625 13	(a) $48,067 47	.....

(a) Includes wholesale liquor in 1895.

REVENUE FROM LICENSES.

REVENUE FROM LICENSES—1905—Concluded.

COUNTIES	Pawnbrokers and Peddlers	Photographers	Physicians and Surgeons	Pools on Races	Power and Light Co's.	Street Railways	Shows, Circuses, etc., excluding Theaters	Shooting Galleries	Telegraph and Telephones	Theatres	Water Companies	Weighing	All Others	Total	Percentage Total licenses collected by each county
Beaverhead	$12 50		$20 00		$100 00		$125 00		$46 50	$44 00		$20 00	$15 00	$15,373 50	2.26
Broadwater		$25 00	75 00				13 00		23 25					6,139 75	.90
Carbon	200 00	45 00	45 00		75 00			15 00	134 25	49 50			72 00	16,835 75	2.47
Cascade	182 50	95 00	455 00		300 00	200 00	15 00	15 00	345 00	100 00	100 00		145 00	57,010 35	8.38
Chouteau	25 00		97 00				10 00	15 00	35 25	20 00				26,335 50	3.87
Custer		15 00	70 00				40 00	15 00	89 25				130 00	10,558 50	1.55
Dawson			90 00							40 00				7,805 50	1.15
Deer Lodge	50 00	35 00	195 00		100 00	200 00	255 00	15 00	397 50	100 00	200 00		90 00	37,947 75	5.58
Fergus	887 50	25 00	321 50		50 00			30 00	150 75	184 00		10 00		23,602 75	3.47
Flathead	145 00	45 00	205 00		100 00				137 25		50 00	20 00		25,021 75	3.68
Gallatin	472 50	20 00	320 00		50 00	200 00	125 00	45 00				40 00		21,662 50	3.18
Granite	25 00	5 00	130 00							8 00			65 00	9,434 00	1.39
Jefferson	112 50		180 00						32 25	15 00				14,352 75	2.11
Lewis and Clark	946 00	90 00	400 00		400 00	200 00	190 00	30 00	489 00	200 00	400 00		130 00	63,792 80	9.38
Madison	250 00		210 00						58 50		50 00			17,456 75	2.57
Meagher			60 00				2 00							6,424 00	.94
Missoula	75 00		160 00		50 00		187 50	5 00		1,380 00	50 00			38,056 50	5.60
Park	37 50	45 00	215 00		62 50		107 00	30 00	228 00	44 00	100 00		245 00	24,671 50	3.63
Powell	12 50		45 00						55 50		50 00			8,708 00	1.29
Ravalli	62 50	30 00	50 00				20 00				50 00	30 00		3,049 00	.45
Rosebud	25 00		35 00							23 00				4,389 25	.65
Silver Bow	4,298 00	125 00	1,315 00		400 00	200 00	290 00	30 00	1,046 25	775 00	600 00		1,732 00	186,097 50	27.35
Sweet Grass	12 50		15 00				3 00		20 25			10 00		4,495 75	.66
Teton	25 00	10 00	85 00				5 00		3 00					10,702 75	1.57
Valley	37 00	5 00	115 00				5 00							12,795 75	1.77
Yellowstone	12 50	25 00	120 00		50 00		50 00			200 00	100 00		75 00	27,798 00	4.09
Total 1905	$7,906 00	$640 00	$5,028 50		$1,737 50	$1,000 00	$1,442 50	$245 00	$3,291 75	$3,182 50	$1,750 00	$130 00	$2,699 00	$680,427 90	100.00
Total year 1904	4,536 00	615 00	3,981 00		1,400 00	850 00	1,619 00	240 00	2,720 25	2,394 00	1,775 00		5,540 37	*647,509 98	
Increase	$3,370 00	$25 00	$1,047 50		$337 50	$150 00		$5 00	$571 50	$788 50		$130 00		32,917 92	
Decrease							176 50				$25 00		$2,841 37		
Percentage paid by each business 1904	1.16	09	.74		.25	.15	21	.04	.48	.42	22	.02	.40		
Total licenses collected, 1895	$4,702 65	$256 00	$2,925 80		$1,945 25	$979 07			$896 00	$3,409 67	$1,601 91		$7,082 49	(b) $472,942 50	

* $4.60 for Oleomargarine included in 1904 total.

(b) Includes $26,399.42 for gambling in 1895; $17.50 for oleomargarine, $601.00 pools on races.

COURT STATISTICS—1904

STATEMENT SHOWING BY COUNTIES AND JUDICIAL DISTRICTS THE COURT BUSINESS TRANSACTED IN MONTANA DURING THE YEAR 1904.

Tracing Number	COUNTIES	Judicial District to which county belongs	Civil Cases pending Dec. 31, 1903	Civil Cases begun during year 1904	Civil cases disposed of	Civil cases pending December 31, 1904	Criminal Cases pending Dec. 31, 1903	Criminal Cases begun by filing informations	Criminal Cases begun by filing indictments	Criminal Cases appealed from lower courts	Criminal Cases begun by filing	Convictions for felonies	Convictions for misdemeanors	Commitments to State Reform School	Number of persons tried and acquitted of criminal charge	Criminal Cases dismissed, nolle prossed, etc.	Criminal Cases pending Dec. 31, 1904	Persons tried for insanity	Persons committed to asylum	Persons acquitted of insanity charge	Persons committed to asylum	Letters of administration issued during 1904	Administrations pending December 31, 1903	Estates Settled	Administrations pending Dec. 31, 1904	Guardianships pending Dec. 31, 1903	Guardians appointed during 1904	Guardianships disposed of during 1904	Guardianships pending Dec. 31, 1904	Executions issued	Decrees of foreclosure issued	Orders of sale	Tracing Number
1	Beaverhead	5	55	81	42	94	32	18	1			2			2		47	4	4			72	10	3	79	31	3		34	9		1	1
2	Broadwater	9	6	17	16	7	12	3										4	4			24	10	8	26	7	1	2	6	2	1	1	2
3	Carbon	6	36	71	64	43	4	4	9		5				2	2	1	2	2			19	16	4	31	19			19	7			3
4	Cascade	8	265	218	302	181	7	69	7	5	4	2	1	2	61	7	12	16	14	2		165	74	18	221	75	16	1	90	26	7	6	4
5	Chouteau	12	60	73	59	74	24	28		5	15	1	2	2	4	2	33	5	5			91	13	14	60	31	6	15	22	6	5	5	5
6	Custer	7	94	46	50	90	4	16		3	13	1			2	2	2	4	3			57	13	12	58	28	5	1	32	8	1	1	6
7	Dawson	7	97	33	30	100	58	16		3	7	2		1	1	1	66	1	1			60	12	2	70	16	3		19				7
8	Deer Lodge	3	99	104	101	102		19		9	7	2	5	9	5		9	8	1			129	17	19	127	55	12	4	63	6	3	3	8
9	Fergus	10	139	154	159	134	7	15			15	6		4	8	9	3	3				9	16	4	61	33	8		41	21	10	10	9
10	Flathead	11	75	151	137	89	17	37		14	11	2		3	2	19	12	7	5			77	25	28	73	44	5		49	21	7	6	10
11	Gallatin	9	29	92	79	42	5	23			13	4	1	4	2	9		9				46	24	19	51	31	9	5	35	4		1	11
12	Granite	3	42	27	22	47	18	11			4	2			3	18	2	2				38	5	4	39	18		2	16	7			12
13	Jefferson	5	425	63	56	432	4			2					2	4	6	5	1			57	20	3	74	27	3		30	21	1	2	13
14	Lewis and Clark	1	187	234	177	244	29	27		4	6	2	1	26	6	19	12	10	2			169	48	20	187	83	11	2	92	21	14	14	14
15	Madison	5	91	52	53	90	4	7			1	2			3	1	4	2	2			78	18	16	80	40	9	16	33	9	3	3	15
16	Meagher	9	8	18	20	6	2	5			3				1	1	2	5	5			14	3	8	9	16	3	1	18	1	1	1	16
17	Missoula	4	112	167	122	157	4	24			15	2	1	4	1	5	19	18	1			124	34	10	148	89	26		115	15	4	4	17
18	Park	6	112	106	85	133	10	38		4	16	5	4	12	2	13	4	2	2			80	18	7	91	24	6		36	6	5	5	18
19	Powell	3	34	33	25	42	5	4		2	1		2	3	1	4	6	6				23	9	14	18	8	6		14		2	1	19
20	Ravalli	4	72	65	47	90	8	5		6	2	6		5	3	3	8	5	3			54	14	6	62	38	5	1	42	3	1	2	20
21	Rosebud	7	20	23	23	20	4	11			1		1	6	3	4						21	7	3	25	7	2		9	4			21
22	Silver Bow	2	421	774	278	917	44	93		6	19	1	4	27	16	76	45	35	10			92	105	19	178	27	34	1	69				22
23	Sweet Grass	6	21	26	41	6	6	13		9	5	2		8	3	10	3	1	2			18	5	5	18	16	1		17	3		2	23
24	Teton	11	25	22	25	22	3	11			3	5			2	4	6	5	1			36	7	5	38	16	10	3	17	3	2	2	24
25	Valley	12	11	44	33	22	74	19			11	2		7		73	1	1				14	7	2	19	4			4	2		4	25
26	Yellowstone	7	49	91	95	45	3	48		1	9		3	19	6	15	8	6	2			30	19	14	35	24	4	2	26	10		4	26
27	Total		2,585	2,785	2,141	3,229	378	586	7	79	185	54	28	251	87	445	196	162	34			1,676	549	307	1,878	801	188	56	933	206	69	78	27

* The figures for Silver Bow County do not include any business prior to J n. 1, 1903.

COURT STATISTICS—1905

STATEMENT SHOWING BY COUNTIES AND JUDICIAL DISTRICTS THE COURT BUSINESS TRANSACTED IN MONTANA DURING THE YEAR 1905.

Tracing Number	COUNTIES	District to which County belongs	Civil Cases pending December 31, 1904	Civil Cases begun during year 1905	Civil Cases pending Dec. 31, 1905	Civil Cases disposed of	Criminal Cases pending Dec. 31, 1904	Criminal Cases begun by filing information	Criminal Cases begun by filing indictments	Criminal Cases appealed from lower courts	Convictions for felonies	Convictions for misdemeanors	Commitments to State Reform School	Criminal Cases dismissed, nolle pressed, etc.	Number of persons tried and acquitted	Criminal Cases pending Dec. 31, 1905	Persons tried for insanity	Persons committed to asylum	Persons acquitted of insanity charge	Administrations pending Dec. 31, 1904	Letters of administration issued during 1905	Estates settled	Administrations pending Dec. 31, 1905	Guardianships pending Dec. 31, 1904	Guardians appointed during 1905	Guardianships disposed of during 1905	Guardianships pending Dec. 31, 1905	Executions issued	Decrees of foreclosure issued	Orders of sale	Tracing Number
1	Beaverhead	5	94	69	120	43	47	14	....	2	8	3	....	9	9	34	2	2	....	79	13	10	82	34	4	2	36	11	4	....	1
2	Broadwater	9	7	26	18	15	....	5	....	....	....	....	1	....	1	3	1	1	....	26	10	7	29	6	3	1	8	3	1	1	2
3	Carbon	6	43	58	57	44	1	7	....	2	....	1	....	3	2	4	7	7	....	43	12	4	51	15	....	....	15	9	1	1	3
4	Cascade	8	181	255	259	177	12	18	1	13	12	21	4	9	9	10	12	9	3	221	42	57	206	90	20	19	91	45	11	9	4
5	Chouteau	12	74	113	128	59	33	34	....	10	16	17	1	35	4	1	2	1	1	60	27	24	63	22	4	2	24	10	4	4	5
6	Custer	7	90	38	56	72	2	33	....	....	8	1	1	5	2	13	....	....	....	58	10	14	54	32	4	4	32	4	1	1	6
7	Dawson	7	100	35	27	108	66	19	....	....	4	1	1	1	....	78	....	....	....	70	10	15	65	19	3	2	5	2	....	....	7
8	Deer Lodge	3	102	115	130	87	....	7	3	9	1	3	....	2	2	8	14	9	5	127	57	37	117	63	12	12	62	13	2	2	8
9	Fergus	10	134	170	187	117	9	26	....	4	10	8	....	7	1	13	12	8	4	61	27	6	82	41	11	2	50	33	12	12	9
10	Flathead	11	89	172	186	81	19	19	....	33	17	4	1	22	3	14	14	10	4	73	38	18	93	49	12	14	51	23	8	8	10
11	Gallatin	9	42	125	114	53	2	59	....	2	14	17	2	8	11	11	10	9	1	51	25	27	49	35	12	6	41	16	5	1	11
12	Granite	3	47	38	43	42	18	9	....	....	2	1	....	3	....	21	7	7	....	39	16	6	49	16	2	1	17	....	....	....	12
13	Jefferson	5	422	64	56	446	4	....	....	10	2	1	1	3	1	6	7	6	1	74	6	33	47	30	3	3	24	5	....	5	13
14	Lewis and Clark	1	177	199	182	194	19	37	....	2	10	2	3	13	2	28	17	14	3	187	66	32	221	92	23	2	113	18	8	10	14
15	Madison	5	90	73	98	65	4	14	....	....	6	1	1	1	1	7	5	4	1	87	26	28	78	33	4	5	24	6	....	2	15
16	Meagher	9	6	13	17	2	2	2	....	1	3	....	....	1	....	1	1	1	....	9	8	5	12	18	....	1	17	1	2	2	16
17	Missoula	4	157	225	177	205	5	36	....	....	13	3	5	6	6	8	13	13	....	148	40	17	171	115	10	1	124	30	....	6	17
18	Park	6	133	147	147	133	13	28	....	4	15	....	....	7	5	15	6	6	....	91	22	34	79	30	36	3	63	16	5	4	18
19	Powell	3	42	36	42	36	5	14	....	....	1	2	....	6	4	6	7	6	1	18	7	5	20	14	4	4	14	2	....	1	19
20	Ravalli	4	90	109	57	142	3	4	....	33	3	10	....	10	3	14	7	5	2	62	18	8	72	42	7	....	49	3	9	9	20
21	Rosebud	7	20	20	21	19	4	23	....	....	6	....	1	9	2	9	1	1	....	25	5	....	30	9	1	....	14	2	....	....	21
22	*Silver Bow	2	917	703	512	1,078	76	99	....	19	....	6	5	32	9	115	47	33	14	178	139	29	288	60	37	11	96	....	....	....	22
23	Sweet Grass	6	6	30	23	13	10	15	....	....	11	2	....	1	....	11	2	1	1	18	4	4	18	17	2	1	18	3	2	2	23
24	Teton	11	12	57	26	33	4	15	....	....	7	....	....	3	3	6	....	....	....	38	5	15	28	17	2	....	23	6	2	2	24
25	Valley	12	22	48	42	28	73	22	....	....	1	....	1	10	1	82	1	1	....	19	9	1	27	4	3	....	7	2	....	....	25
26	Yellowstone	7	45	120	121	44	15	16	....	6	10	2	....	15	1	9	10	9	1	35	32	15	52	26	5	6	25	10	....	3	26
27	Total	....	3,162	3,038	2,864	3,336	446	575	4	140	207	78	34	219	87	540	205	163	42	1,890	644	451	2,083	929	225	95	1059	274	77	85	27

* The figures for Silver Bow County do not include any business prior to Jan. 1, 1903.

NATURALIZATIONS—1904

STATEMENT SHOWING BY COUNTIES THE NUMBER AND NATIVITY OF PERSONS TO WHOM NATURALIZATION PAPERS WERE ISSUED DURING THE YEAR 1904 AS REPORTED BY CLERKS OF THE DISTRICT COURT.

Tracing Number	COUNTIES	Austria	Belgium	Bohemia	Canada	Cuba	Denmark	England	Finland	France	Germany	Holland	Ireland	Italy	Norway	Russia	Sandwich Islands	Scotland	South America	Sweden	Switzerland	Wales	All Other Countries	Total	Percentage of persons naturalized in each county, 1904	Total 1903	Percentage of persons naturalized in each county, 1903	Tracing Number
1	Beaverhead	2			2		5	2			3		2		1					1	1			19	.73	2	.53	1
2	Broadwater				1			3			1		2		1			1						9	.34	2	.53	2
3	Carbon	10			4		2	3	39		4		23	11	8	4		1		2				90	3.44	13	3.45	3
4	Cascade	81			44			19	33	6	10		7	11	13	7		4		34	2	5	1	276	10.53	80	21.28	4
5	Chouteau	14						6		1	7				1			1		2	1			34	1.29	23	6.12	5
6	Custer							3			2		3		4			2		1		1		16	.61	7	1.86	6
7	Dawson	1					5	12			6			3	13	1				4			2	47	1.79	4	1.06	7
8	Deer Lodge	70			24		1	4	6	1	5		50	14	5	1		1		20	1	2		205	7.83	22	5.85	8
9	Fergus	5			18		1	2		1	8	1	7		6			9		6	2		3	69	2.63	35	9.31	9
10	Flathead	1			24		1	3			14		6	20	7	1				3	1			79	3.01	20	5.32	10
11	Gallatin	5			10		1	3			5	3	3		1	2		2		2	2			39	1.48	8	2.13	11
12	Granite	8			4			11	13		2			21	1			1		2	1		6	51	1.94	2	.53	12
13	Jefferson						1	9			2			1						3				16	.61	1	.27	13
14	Lewis and Clark	54	2	2	24		3	13	1	4	14		10	2	10	4		2		19	1	2	7	174	6.64	14	3.72	14
15	Madison	1			7			1	1		2		2							2		2		18	.69	6	1.60	15
16	Meagher		1		2			2					1		6			1					1	14	.53	11	2.93	16
17	Missoula	2	4		43		3	5	5		4	1	2	4	13	1		2		21				110	4.20	11	2.39	17
18	Park	22			13		4	6		1	6		1	25	6	1				7			1	93	3.55	11	2.93	18
19	Powell							3			1									1				5	.19	1	.27	19
20	Ravalli				4			2	1		2									2				11	.42	9	2.39	20
21	Rosebud						2	1		1	1	1		1	4									11	.42	3	.80	21
22	Silver Bow	219	3		83		5	105	161	4	28		295	98	9	17		5		36	4	4	38	1,105	42.16	43	11.44	22
23	Sweet Grass				2		1	5		1	2	1	1		28			1						42	1.60	17	4.52	23
24	Teton				9		1	5			3				3			2		2	1			26	.99	9	2.39	24
25	Valley		1		11		3	11	1		8		3	1	2			2		2			1	46	1.76	13	3.45	25
26	Yellowstone				2			2			4	1	1	1	3			1		1				16	.61	9	2.39	26
27	Total	486	11	2	331		39	241	261	20	144	8	598	194	143	39		38		173	17	16	60	2,621	100.00	376	100.00	27
28	Percentage of Nationalities	18.56	.42	.07	12.64		1.48	9.20	9.97	.76	.50	.30	15.16	7.41	5.46	1.48		1.45		6.60	.64	.61	2.29					28

NATURALIZATIONS—1905

STATEMENT SHOWING BY COUNTIES THE NUMBER AND NATIVITY OF PERSONS TO WHOM NATURALIZATION PAPERS WERE ISSUED DURING THE YEAR 1905, AS REPORTED BY CLERKS OF THE DISTRICT COURT.

Tracing Number	COUNTIES	Austria	Belgium	Bohemia	Canada	Cuba	Denmark	England	Finland	France	Germany	Holland	Ireland	Italy	Norway	Russia	Sandwich Islands	Scotland	South America	Sweden	Switzerland	Wales	All Other Countries	Total	Percentage of persons naturalized in each county 1905	Total 1904	Percentage of persons naturalized in each county 1904	Tracing Number
1	Beaverhead						1	2					1							1	2			7	2.07	19	.73	1
2	Broadwater																							9	.34	2		2
3	Carbon				1			1	1	1														11	3.25	90	3.44	3
4	Cascade	2			13			1	4	1	3		4		3			6		9	1			47	13.81	276	10.53	4
5	Chouteau				6		1	2			8		1		5			7		1				31	9.10	34	1.29	5
6	Custer						1	4			2				1			4						12	3.54	16	.61	6
7	Dawson														1									1	.30	47	1.79	7
8	Deer Lodge												2											5	1.48	205	7.83	8
9	Fergus	1			4			2			5		1		2	1		2						21	5.90	69	2.63	9
10	Flathead	2	1		4						2			1	1	2		3						18	5.31	79	3.01	10
11	Gallatin				1							1									1			3	.86	39	1.48	11
12	Granite				1																			1	.30	51	1.94	12
13	Jefferson				1								1											2	.60	16	.61	13
14	Lewis and Clark	1			1			1	1		2		1		1			1						11	3.25	174	6.64	14
15	Madison							1			1													3	1.48	18	.69	15
16	Meagher														2			1						4	1.18	14	.53	16
17	Missoula				1		1	1	1		1			1	3			2						15	4.40	110	4.20	17
18	Park	3			3																			7	2.07	93	3.55	18
19	Powell				1						1													2	.60	5	.19	19
20	Ravalli							2													2			4	1.18	11	.42	20
21	Rosebud										1													1	.30	11	.42	21
22	Silver Bow	3			6		2	5	3	1	5		18	3	1	1		2		1	1	1	28	81	23.90	1,105	42.16	22
23	Sweet Grass							2				1	1		2									6	1.78	42	1.60	23
24	Teton				3			3		1	1													10	2.96	26	.99	24
25	Valley				3			2			4		3		1									13	3.85	46	1.76	25
26	Yellowstone	1			5			1			9			2	1					3				22	6.50	16	.61	26
27	Total	13	1		54		6	35	10	4	45	2	33	7	31	4		28		35	7	1	28	339	100.00	2,621	100.00	27
28	Percentage of Nationalities	3.84	.30		15.93		1.77	8.85	2.95	1.18	13.28	.59	9.73	2.06	9.14	1.18		8.26		10.32	2.06	.30	8.26						28

NATURALIZATIONS—1894-1905

STATEMENT SHOWING THE NUMBER AND NATIVITY OF PERSONS RECEIVING FINAL NATURALIZATION PAPERS 1894 TO 1905.

YEAR AND FROM WHAT COURT PAPERS WERE ISSUED	Austria	Belgium	Bohemia	Canada	Cuba	Denmark	England	Finland	France	Germany	Holland	Ireland	Italy	Norway	Russia	Sandwich Islands	Scotland	South America	Sweden	Switzerland	Wales	All Other Countries	Total
State Courts, 1894	604	20	6	2,152	(*)	112	1,511	305	60	727	(*)	1,382	318	402	88	....	263	....	950	147	141	90	9,278
U. S. Courts, 1894	51	1	1	94	(*)	11	128	23	4	57	(*)	100	38	22	6	....	15	....	66	15	12	12	656
Total	655	21	7	2,246	(*)	123	1,639	328	64	784	(*)	1,482	356	424	94	....	278	....	1,016	162	153	102	9,934
State Courts, 1895	4	1	....	62	....	15	35	2	5	39	(*)	31	4	26	6	....	17	....	29	7	1	3	287
Total	4	1	....	62	....	15	35	2	5	39	(*)	31	4	26	6	....	17	....	29	7	1	3	287
State Courts, 1896	253	6	....	525	....	45	341	102	22	286	(*)	381	127	192	169	....	108	....	329	34	37	86	3,043
U. S. Courts, 1896	1	....	....	1	....	....	2	....	....	3	....	2	....	1	....	....	....	....	....	....	....	2	12
Total	254	6	....	526	....	45	343	102	22	289	(*)	383	127	193	169	....	108	....	329	34	37	88	3,055
State Courts, 1897	13	....	1	70	....	12	51	1	6	59	(*)	65	6	29	5	....	19	....	37	7	4	23	408
U. S. Courts, 1897	....	....	....	1	....	....	2	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	5
Total	13	....	1	71	....	12	53	1	7	60	(*)	65	6	29	5	....	19	....	37	7	4	23	413
State Courts, 1898	354	9	3	352	....	24	239	112	22	162	(*)	572	127	119	22	....	84	....	194	24	21	54	2,199
U. S. Courts, 1898	15	....	....	5	....	....	10	....	....	1	....	15	3	....	2	1	3	....	3	....	....	....	58
Total	369	9	3	357	....	24	249	112	22	163	(*)	587	130	119	24	1	87	....	197	29	21	54	2,557
State Courts, 1899	17	3	10	81	....	11	38	9	2	46	(*)	49	6	25	9	....	15	....	37	9	5	13	388
U. S. Courts, 1899	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1
Total	17	3	10	81	....	11	39	9	2	46	(*)	49	6	25	9	....	18	....	37	9	5	13	389
State Courts, 1900	645	17	2	562	1	47	408	217	19	268	(*)	740	222	189	54	....	93	5	323	31	19	67	3,929
U. S. Courts, 1900	4	....	....	3	....	....	8	16	1	6	....	15	4	2	....	2	3	....	3	2	....	....	69
Total	649	17	2	565	1	47	416	233	20	274	(*)	755	226	191	54	2	96	5	326	33	19	67	3,998

NATURALIZATIONS—1894-1905

STATEMENT SHOWING THE NUMBER AND NATIVITY OF PERSONS RECEIVING FINAL NATURALIZATION PAPERS 1894 TO 1905—Concluded.

YEAR AND FROM WHAT COURT PAPERS WERE ISSUED	Austria	Belgium	Bohemia	Canada	Cuba	Denmark	England	Finland	France	Germany	Holland	Ireland	Italy	Norway	Russia	Sandwich Islands	Scotland	South America	Sweden	Switzerland	Wales	All Other Countries	Total
State Courts, 1901	13	5	1	64	....	7	31	4	1	32	(*)	34	7	25	3	....	8	....	23	7	3	4	272
U. S. Courts, 1901	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1
Total	13	5	1	64	....	7	31	4	1	32	(*)	34	7	25	3	....	8	....	23	8	3	4	273
State Courts, 1902	282	6	1	322	....	53	217	54	10	158	9	344	106	113	37	....	44	....	145	23	12	29	1,965
U. S. Courts, 1902	9	....	....	5	....	1	13	....	1	7	....	20	12	3	1	1	8	....	8	2	1	5	97
Total	291	6	1	327	....	54	230	54	11	165	9	364	118	116	38	1	52	....	153	25	13	34	2,062
State Courts, 1903	18	1	1	75	....	7	49	7	3	50	4	32	7	36	7	....	15	....	43	14	4	3	376
U. S. Courts, 1903	....	....	....	3	....	....	1	....	....	....	....	....	....	....	....	....	2	....	2	....	....	....	8
Total	18	1	1	78	....	7	50	7	3	50	4	32	7	36	7	....	17	....	45	14	4	3	384
State Courts, 1904	486	11	2	331	....	39	241	261	20	114	8	398	194	143	39	....	38	....	173	17	16	60	2,621
State Courts, 1905	13	1	....	54	....	6	30	10	4	45	2	33	7	31	4	....	28	....	35	7	1	28	339

(*) Included in "All Other Countries." Note—No final Naturalization papers were issued from the U. S. Courts in Montana, 1895, 1901 or 1905.

NATURALIZATIONS--1894-1905

STATEMENT SHOWING THE TOTAL NUMBER OF FINAL NATURALIZATION PAPERS ISSUED IN UNITED STATES AND STATE COURTS OF MONTANA, 1894 TO 1905, CLASSIFIED BY NATIVITY.

Tracing Number	YEAR	Austria	Belgium	Bohemia	Canada	Cuba	Denmark	England	Finland	France	Germany	Holland	Ireland	Italy	Norway	Russia	Sandwich Islands	Scotland	South America	Sweden	Switzerland	Wales	All Other Countries.	Total	Tracing Number
1	1894	655	21	7	2,246	[illegible]	123	1,639	328	64	784	(*)	1,482	356	424	94	....	278	....	1,016	162	153	102	9,934	1
2	1895	4	1	....	62	....	15	35	2	5	39	(*)	31	4	26	6	....	17	....	29	7	1	3	287	2
3	1896	254	6	....	520	....	45	343	102	22	289	(*)	383	127	193	169	....	108	....	329	34	37	88	3,055	3
4	1897	13	....	1	7[illegible]	....	12	53	1	7	60	(*)	65	6	29	5	....	19	....	37	7	4	23	413	4
5	1898	369	9	3	357	....	24	249	112	22	163	(*)	587	130	119	24	1	87	....	197	29	21	54	2,557	5
6	1899	17	3	10	81	....	11	39	9	2	46	(*)	49	6	25	9	....	18	....	37	9	5	13	389	6
7	1900	649	17	2	8[illegible]	1	47	416	233	20	274	(*)	755	226	191	54	2	96	5	326	33	19	67	3,998	7
8	1901	13	5	1	64	....	7	31	4	1	32	(*)	34	7	25	3	....	8	....	53	8	3	4	273	8
9	1902	291	6	1	327	....	54	230	54	11	165	9	361	118	116	38	1	52	....	153	25	13	34	2,062	9
10	1903	18	1	1	78	....	7	50	7	3	50	4	32	7	36	7	....	17	....	45	14	4	3	384	10
11	1904	486	11	2	331	....	39	241	261	20	144	8	398	194	143	39	....	38	....	173	17	16	60	2,621	11
12	1905	13	1	....	54	....	6	30	10	4	45	2	33	7	31	4	....	28	....	35	7	1	28	339	12
13	Total	2,782	81	28	4,762	1	390	3,356	1,123	181	1,091	23	4,213	1,188	1,358	452	4	766	5	2,400	352	277	479	26,312	13

(*) Included in "All other Countries."

DIVORCES - 1904

COMPARATIVE STATEMENT SHOWING THE NUMBER OF DIVORCES GRANTED AND MARRIAGE LICENSES ISSUED DURING THE CALENDAR YEARS 1904 AND 1903, AS REPORTED BY CLERKS OF THE DISTRICT COURTS.

Tracing Number.	COUNTIES	Granted on Complaint of Wife		Granted on Complaint of Husband		Total Number Granted		Percentage of Divorces Granted in Each County		Marriage Licenses Issued		Percentage of Divorces Granted to Marriage Licenses Issued		Tracing Number.
		1903	1904	1903	1904	1903	1904	1903	1904	1903	1904	1903	1904	
1	Beaverhead	2	6	3	3	5	9	1.00	1.90	70	49	7.14	18.37	1
2	Broadwater	1	1	1	0	2	1	.40	.21	19	13	10.53	7.69	2
3	Carbon	9	10	3	3	12	13	2.40	2.75	87	75	13.79	17.33	3
4	Cascade	35	32	13	12	48	44	9.57	9.30	238	214	20.17	20.56	4
5	Chouteau	13	3	3	3	16	6	3.19	1.27	79	95	20.70	6.32	5
6	Custer	5	5	.....	1	5	6	1.00	1.27	36	40	13.89	15.00	6
7	Dawson	2	4	4	1	6	5	1.20	1.06	24	27	25.00	18.52	7
8	Deer Lodge	8	11	7	2	15	13	2.99	2.75	118	110	12.71	11.52	7
9	Fergus	9	12	2	2	11	14	2.20	2.96	75	72	14.67	19.44	9
10	Flathead	28	26	6	8	34	34	6.78	7.19	132	143	25.76	23.77	10
11	Gallatin	16	15	4	4	20	19	3.99	4.02	113	116	17.70	16.38	11
12	Granite	4	2	.....	0	4	2	.80	.42	20	16	20.00	12.50	12
13	Jefferson	3	4	.....	4	3	8	.60	1.69	28	30	10.71	26.66	13
14	Lewis and Clark	43	30	12	10	55	40	10.97	8.45	263	224	21.32	17.85	14
15	Madison	2	5	4	1	6	6	1.27	1.27	54	52	11.11	11.54	15
16	Meagher	1	1	1	0	2	1	.40	.21	9	5	15.38	20.00	16
17	Missoula	30	25	6	15	36	40	7.19	8.45	165	166	21.82	21.12	17
18	Park	22	10	5	6	27	16	5.39	3.38	91	110	29.67	14.54	18
19	Powell	1	5	.....	3	1	8	.20	1.69	19	29	5.26	27.59	19
20	Ravalli	6	10	8	3	14	13	2.79	2.75	72	59	19.44	22.04	20
21	Rosebud	4	1	1	2	5	3	1.00	.63	14	12	35.71	25.00	21
22	Silver Bow	93	89	37	42	130	131	25.95	27.71	613	662	21.21	19.80	22
23	Sweet Grass	7	1	1	1	8	2	1.60	.42	22	25	36.36	8.00	23
24	Teton	5	3	2	1	7	4	1.40	.84	26	16	26.92	25.00	24
25	Valley	3	7	1	3	4	10	.80	2.12	41	39	.97	25.64	25
26	Yellowstone	20	15	5	10	25	25	4.99	5.29	115	112	21.74	22.32	26
27	Total	372	333	129	140	501	473	100.00	100.00	2,543	2,511	19.70	18.83	27
28	Percentage	74.25	70.40	25 75	29.60	100.00	100.00	.....	.....	.....	.....	.....	.....	28

DIVORCES—1905

COMPARATIVE STATEMENT SHOWING THE NUMBER OF DIVORCES GRANTED AND MARRIAGE LICENSES ISSUED DURING THE CALENDAR YEARS 1904 AND 1905, AS REPORTED BY CLERKS OF THE DISTRICT COURTS.

Tracing Number.	COUNTIES	Granted upon complaint of wife		Granted upon complaint of husband		Total number Granted		Percentage of Divorces Granted in Each County		Marriage Licenses Issued		Percentage of Divorces Granted to Marriage Licenses Issued		Tracing Number.
		1904	1905	1904	1905	1904	1905	1904	1905	1904	1905	1904	1905	
1	Beaverhead	6	10	3	2	9	12	1.90	2.42	49	33	18.37	36.36	1
2	Broadwater	1	2	0	1	1	3	.21	.60	13	17	7.69	17.65	2
3	Carbon	10	8	3	3	13	11	2.75	2.23	75	77	17.33	14.38	3
4	Cascade	32	27	12	12	44	39	9.30	7.88	214	204	20.56	19.12	4
5	Chouteau	3	14	3	5	6	19	1.27	3.84	95	79	6.32	24.05	5
6	Custer	5	9	1	2	6	11	1.27	2.22	40	53	15.00	20.76	6
7	Dawson	4	11	1	3	5	14	1.06	2.82	27	27	18.52	51.85	7
8	Deer Lodge	11	10	2	10	13	20	2.75	4.04	110	117	11.82	17.09	8
9	Fergus	12	17	2	5	14	22	2.96	4.45	72	88	19.44	25.00	9
10	Flathead	26	42	8	13	34	55	7.19	11.12	143	127	23.77	43.31	10
11	Gallatin	15	15	4	3	19	18	4.02	3.64	116	143	16.38	12.60	11
12	Granite	2	2	0	2	2	4	.42	.81	16	15	12.50	26.66	12
13	Jefferson	4	7	4	0	8	7	1.69	1.41	30	26	26.66	27.00	13
14	Lewis and Clark	30	41	10	12	40	53	8.45	10.71	224	262	17.85	20.23	14
15	Madison	5	4	1	1	6	5	1.27	1.01	52	46	11.54	10.87	15
16	Meagher	1	0	0	1	1	1	.21	.20	5	13	20.00	76.92	16
17	Missoula	25	29	15	7	40	36	8.45	7.28	166	200	21.12	13.00	17
19	Park	10	11	6	5	16	16	3.38	3.23	110	124	14.54	12.90	18
19	Powell	5	1	3	0	8	1	1.69	.20	29	22	27.59	4.55	19
20	Ravalli	10	7	3	4	13	11	2.75	2.22	59	64	22.04	17.19	26
21	Rosebud	1	1	2	0	3	1	.63	.20	12	26	25.00	3.85	21
22	Silver Bow	89	71	42	21	131	92	27.71	18.60	662	720	19 80	12.60	22
23	Sweet Grass	1	2	1	1	2	3	.42	.60	25	15	8.00	20.00	23
24	Teton	3	2	1	1	4	3	.84	.60	16	16	25.00	18.75	24
25	Valley	7	1	3	4	10	8	2.12	1.61	39	47	25.64	17.00	25
26	Yellowstone	15	24	10	6	25	30	5.29	6.06	112	118	22.32	25.42	26
27	Total	333	371	140	124	473	495	100.00	100.00	2,511	2,689	18.83	18.41	27
28	Percentage	70.40	74.93	29.60	25.07	100.00	100.00	.....	.....	.....	.....	.....	.....	28

JAIL INCARCERATIONS—1904

COUNTIES	WHITE			COLORED			INDIANS, INCLUDING HALF BREEDS, CHINESE AND JAPANESE			Total Confined During the Year	DAYS CONFINED		OFFENSE CHARGED		Witnesses held	Insane, temporarily in charge of the sheriff	Percentage of incarcerations for each county to total incarcerations in the state—1904
	Male	Female	Total	Male	Female	Total	Male	Female	Total		Total number of days all were confined	Average number of days each was confined	Miscellaneous	Felonies, held over for action of district court			
Beaverhead	39	2	41	.....	.....	.....	5	.....	5	*46	1,607	34.9	30	14	.....	2	1.16
Broadwater	12	1	13	.....	1	1	.....	.....	.....	*14	38	2.7	11	.....	.....	3	.35
Carbon	12	.....	12	.....	.....	.....	.....	.....	.....	*12	712	59.3	5	7	.....	.....	.30
Cascade	82	1	83	2	.....	2	.....	.....	.....	85	2,811	33.1	53	18	1	13	2.14
Chouteau	87	2	89	5	.....	5	6	1	7	*101	5,500	54.4	59	36	.....	6	2.54
Custer	48	2	50	4	1	5	1	.....	1	*56	1,471	26.3	35	18	.....	3	1.46
Dawson	31	.....	50	2	.....	2	.....	.....	.....	33	1,455	44.1	9	22	1	1	.83
Deer Lodge	192	26	218	17	8	25	3	1	4	252	6,000	24.0	217	28	5	2	6.34
Fergus	161	4	165	6	.....	6	1	.....	1	*184	977	5.3	152	28	.....	4	4.63
Flathead	139	9	148	1	4	5	9	.....	9	162	3,387	20.9	85	61	3	13	4.07
Gallatin	94	3	97	2	.....	2	1	.....	.....	100	2,107	21.0	58	26	8	8	2.52
Granite	45	1	46	.....	.....	.....	.....	.....	.....	*46	496	10.8	36	7	.....	3	1.16
Jefferson	63	3	66	2	.....	2	.....	.....	.....	68	1,000	14.7	61	2	1	4	1.71
Lewis and Clark	188	32	220	13	7	20	1	.....	1	241	6,958	29.0	168	48	2	23	6.06
Madison	17	.....	17	.....	.....	.....	.....	.....	.....	17	1,357	79.8	12	3	.....	2	.43
Meagher	15	1	16	.....	.....	.....	.....	.....	.....	*16	266	16.6	4	9	.....	3	.40
Missoula	458	3	461	38	4	42	15	.....	15	*518	7,277	12.1	496	10	.....	12	13.03
Park	347	15	362	11	2	13	5	.....	5	*380	4,202	11.1	347	28	4	1	9.56
Powell	152	.....	152	.....	1	1	.....	.....	.....	*153	2,317	15.1	3	145	1	4	3.85
Ravalli	46	1	47	.....	.....	.....	4	.....	4	51	276	5.4	31	11	.....	9	1.28
Rosebud	64	1	65	.....	1	1	1	.....	1	67	744	11.1	35	28	4	.....	1.69
Silver Bow	802	113	915	137	98	235	6	2	8	*1,158	18,125	79.0	706	414	17	21	29.12
Sweet Grass	24	.....	24	.....	.....	.....	.....	.....	.....	24	953	39.7	3	20	.....	1	.60
Teton	33	.....	33	.....	.....	.....	10	.....	10	*43	2,344	54.5	23	14	.....	6	1.08
Valley	48	2	50	.....	.....	.....	3	.....	3	*53	2,082	39.3	14	32	1	6	1.36
Yellowstone	86	1	87	8	.....	8	1	.....	1	96	4,460	46.5	46	45	.....	5	2.41
Total	3,285	223	3,508	248	127	375	72	4	76	3,976	79,282	20.0	2,699	1,074	48	155	100.00

*All or part of the city prisoners are confined in County jail.

JAIL INCARCERATIONS—1905

COUNTIES	White			Colored			Indians, Including Half Breeds, Chinese, and Japanese.			Total Confined During the Year	Days Confined		Offenses Charged		Witnesses Held	Insane, temporarily in charge of the sheriff	Per cent of incarcerations for each county to total incarcerations in the State, 1905
	Male	Female	Total	Male	Female	Total	Male	Female	Total		Total number of days all were confined	Average number of days each was confined	Miscellaneous	Felonies			
Beaverhead	54	1	55	1	.....	1	.....	.....	.....	56	1,469	26.2	33	23	.....	.....	1.16
Broadwater	16	2	18	1	.....	1	.....	.....	.....	*19	76	4.0	11	7	.....	1	.40
Carbon	31	.....	31	4	.....	4	.....	.....	.....	*35	1,409	40.3	24	11	.....	.....	.73
Cascade	102	8	110	2	.....	2	.....	.....	.....	112	3,481	31.1	91	10	.....	11	2.33
Chouteau	67	3	70	9	3	12	8	.....	8	*90	6,414	71.3	63	25	.....	2	1.87
Custer	38	.....	38	.....	.....	.....	.....	.....	.....	*38	691	18.2	20	16	.....	2	.79
Dawson	34	3	37	.....	.....	.....	.....	.....	.....	37	1,674	45.2	12	20	3	2	.77
Deer Lodge	270	25	295	11	.....	11	4	1	5	311	5,220	16.8	275	18	.....	18	6.47
Fergus	83	1	84	1	.....	1	11	.....	11	*96	1,591	16.6	31	44	5	16	2.00
Flathead	123	9	132	1	1	2	13	.....	13	147	3,514	23.9	85	43	1	18	3.06
Gallatin	141	6	147	3	.....	3	.....	.....	.....	150	2,536	16.9	82	46	9	13	3.12
Granite	27	2	29	.....	.....	.....	.....	.....	.....	29	512	17.7	15	6	3	5	.60
Jefferson	62	2	64	.....	.....	.....	1	.....	1	*65	1,064	16.4	51	8	1	5	1.35
Lewis and Clark	218	48	266	14	12	26	2	.....	2	294	11,021	37.5	234	31	7	22	6.12
Madison	32	3	35	.....	.....	.....	.....	.....	.....	*35	467	13.3	22	7	.....	6	.73
Meagher	10	.....	10	.....	.....	.....	.....	.....	.....	*10	634	63.4	8	1	.....	1	.21
Missoula	623	8	631	39	6	45	42	3	45	*721	8,168	11.3	697	16	2	6	15.00
Park	516	10	526	5	4	9	3	.....	3	*538	3,533	6.6	518	13	1	6	11.25
Powell	128	.....	128	1	.....	1	2	.....	2	*131	2,186	16.7	123	3	1	4	2.72
Ravalli	19	1	20	.....	.....	.....	3	.....	3	23	253	10.0	13	5	.....	5	.48
Rosebud	18	.....	18	3	.....	3	1	.....	1	22	601	27.6	10	11	.....	1	.46
Silver Bow	1,216	103	1,319	193	50	243	20	4	24	*1,586	20,406	12.9	911	589	33	53	32.00
Sweet Grass	28	1	29	.....	1	1	.....	.....	.....	30	688	22.9	11	18	.....	1	.62
Teton	26	.....	26	.....	.....	.....	8	.....	8	*34	940	27.7	21	13	.....	.....	.71
Valley	65	.....	65	.....	.....	.....	2	2	4	*69	1,552	22.5	44	23	.....	2	1.44
Yellowstone	125	2	127	1	.....	1	.....	.....	.....	128	4,952	38.7	70	44	1	13	2.66
Total	4,072	238	4,310	289	77	366	120	10	130	4,806	85,652	17.7	3,475	1,051	67	213	.....

OFFICIAL DIRECTORY.

United States Officials

Office.	Name.	Residence.
Judge of U. S. District Court	William H. Hunt	Helena.
U. S. District Attorney	Carl Rasch	Helena.
Assistant U. S. District Attorney	J. Miller Smith	Helena.
Clerk to U. S. Attorney	Henry G. Rodgers	Helena.
Clerk of U. S. District Court	George W. Sproule	Helena.
Deputy Clerk U. S. District Court	Charles R. Garlow	Helena.
Deputy Clerk U. S. District Court	F. H. Drake	Butte.
United States Marshal	A. W. Merrifield	Kalispell.
Surveyor General	John F. Cone	Hamilton.
Collector U. S. Customs	C. M. Webster	Great Falls.
Register Helena Land Office	F. D. Miracle	Helena.
Receiver Helena Land Office	George O. Freeman	Helena.
Register Bozeman Land Office	M. R. Wilson	Bozeman.
Receiver Bozeman Land Office	Walter H. Sales	Bozeman.
Register Miles City Land Office	Sam Gordon	Miles City.
Receiver Miles City Land Office	J. C. Auld	Miles City.
Register Missoula Land Office	Daniel Arms	Missoula.
Receiver Missoula Land Office	E. A. Winstanley	Missoula.
Register Lewistown Land Office	C. E. McKoin	Lewistown.
Receiver Lewistown Land Office	Willis A. Hedges	Lewistown.
Register Kalispell Land Office	Andrew Swaney	Kalispell.
Receiver Kalispell Land Office	J. R. Hillman	Kalispell.
Register Great Falls Land Office	James M. Burlingame	Great Falls.
Receiver Great Falls Land Office	Charles A. Wilson	Great Falls.
Register Billings Land Office	E. E. Esselstyn	Billings.
Receiver Billings Land Office	C. C. Bever	Billings.

UNITED STATES IMMIGRATION SERVICE.

Name	Office.	Residence.
Alfred Hampton	Inspector in Charge	Helena.
Howard D. Eby	Chinese and Immigrant Inspector	Helena.
Francis W. McFarland	Chinese and Immigrant Inspector	Helena.
Moy Don Shing	Chinese Interpreter	Helena.
Pliny Patrick	Clerk and Acting Inspector	Helena.
Samuel C. Walker	Chinese and Immigrant Inspector	Havre.
Clark Andrews	Chinese and Immigrant Inspector	Bonner's Ferry.

COMMISSIONERS OF DEEDS FOR MONTANA.

CALIFORNIA.

Name.	Address.
George T. Knox	505 California St., San Francisco.

DISTRICT OF COLUMBIA.

Charles S. Bundy	Cor. 4½ and D. St., Washington.

LOUISIANA.

Somat C. Maloney	Cor. Carondelet and Common St., New Orleans.

MASSACHUSETTS.

Edward J. Jones	61 Court St., Boston.

MISSOURI.

John A. Peck	7th and Chestnut, St. Louis.

NEW YORK.

Joseph B. Braman	120 Broadway, New York.
George H. Cory	56 Wall St., New York.

PENNSYLVANIA.

Francis E. Fairman	822 Frick Building, Philadelphia.

GREAT BRITAIN.

George McIldowie, Jr.	Belfast, Ireland.
J. Burke Hendry	Lincoln's Inn, London, England.
Thomas Cato Warsfold	9 Staple Inn, London, England.

United States Commissioners

Name	Address	Appointed
Allen, George R.	Twin Bridges	Oct. 21, 1905
Armstrong, E. O.	Culbertson	Oct. 10, 1904
Arnoux, J. M.	Browning	June 30, 1906
Belcher, J. F.	Lavina	Dec. 13, 1905
Berg, Olaf	Red Stone	Oct. 1, 1906
Beebe, Wm. A.	Big Fork	Oct. 10, 1904
Bailey, F. C.	Heron	May 1, 1905
Blackstone, D. L.	Chinook	Jan. 27, 1905
Boyle, C. H.	Fort Benton	Dec. 18, 1906
Bradley, C. C.	Harrisburg	Apr. 1, 1905
Brockway, B. W.	Malta	Oct. 1, 1906
Buck, Chas. H.	Stevensvillle	June 1, 1905
Burleigh, H. J.	Plains	Nov. 1, 1904
Bush, J. E.	Zortman	Feb. 13, 1906
Butts, Wm. L.	Leedy	Apr. 7, 1906
Catlin, Thos. W.	Deer Lodge	Sept. 1, 1905
Coulter, G. H.	Culbertson	July 1, 1905
Covington, C. C.	Augusta	May 14, 1906
Cowan, W. T.	Box Elder	Dec. 14, 1905
Cullop, James E.	Hamilton	Dec. 15, 1906
Darling, M. A.	Conrad	May 12, 1903
Daniels, M. A.	Poplar	Apr. 1, 1905
Davis, A.	Livingston	Apr. 10, 1905
Davis, Geo. W.	Sweet Grass	Dec. 4, 1905
Dempsey, P. H.	Dayton	Apr. 21, 1905
Dodge, Warrren S.	Whitefish	Feb. 12, 1904
Downey, B.	Troy	July 24, 1905
Dunlap, John	Hill	Sept. 27, 1904

Name	Address	Appointed
Farris, James T.	Hinsdale	Oct. 21, 1904
Flint, James A.	Pony	Oct. 3, 1906
Frary, W. S.	Great Falls	Apr. 1, 1905
Faust, H. J.	Ovando	Dec. 23, 1903
Forsythe, B. L.	Lake View	Oct. 31, 1906
Fraser, A.	Billings	July 1, 1905
Gallinger, Elwood	Leedy	Sept. 14, 1904
Garrett, E. C.	Chouteau	Dec. 16, 1905
Gill, A. D.	Landusky	Mar. 10, 1904
Glasscock, W. R.	Ovando	Sept. 11, 1906
Grande, A. C.	White Sulphur Springs	Feb. 5, 1906
Handel, F. W.	Musselshell	Feb. 1, 1906
Harden, G. W.	White Sulphur Springs	Apr. 1, 1905
Henderson, W. C.	Jordan	Feb. 23, 1904
Hendricks, D. A.	Columbia Falls	Sept. 27, 1904
Hill, H. B.	Mondak	July 24, 1905
Hyde, W. L.	Bridger	May 5, 1905
Jacobson, Carl M.	Flandrum	Dec. 1, 1906
James, J. W.	Anaconda	Nov. 7, 1903
Jewett, H. C.	Fishtail	July 1, 1905
Johnson, A. S.	Dillon	Mar. 9, 1905
Jordan, E. E.	Wibaux	Apr. 1, 1906
Kelsey, F. T.	Moorhead	Dec. 23, 1906
Kerr, John J.	Glasgow	Sept. 17, 1903
Kinna, C. J.	Lowry	May 23, 1903
Keuhn, Wm. T.	Elliston	Nov. 19, 1902
Kriedler, F. M.	Miles City	July 1, 1905
Kyle, W. D.	Butte	July 25, 1905
Lindsay, A. Y.	Eureka	Dec. 3, 1906
Lyle, E. W.	Red Lodge	Dec. 4, 1905
McAnelly, A. P.	Belt	Oct. 4, 1904
McDowell, J.	Gold Butte	May 7, 1903
McGee, G. W.	Dupuyer	Nov. 7, 1903
Mathews, W.	Chouteau	Apr. 8, 1905
Meluni, B. M.	Capitol	Dec. 12, 1905
Miller, F. E.	Crow Agency	Apr. 7, 1906
Moore, W. E.	Philipsburg	Nov. 8, 1905
Morris, F. J.	Hamilton	July 1, 1905
Muri, D. J.	Forsyth	Nov. 18, 1905
Mushbach, J. E.	Red Lodge	Dec. 22, 1904
Newhall, E. B.	Big Sandy	Oct. 13, 1906
O'Donnell, D.	Trout Creek	Apr. 15, 1905
Parker, Verne	Kismet	July 1, 1905
Peck, W. H.	Garneill	Nov. 19, 1902
Posten, J. D.	Libby	July 1, 1905
Pound, H. C.	Big Timber	Nov. 3, 1902
Pratt, Samuel B.	Libby	July 1, 1905
Pyper, W. B.	Havre	Feb. 23, 1904
Randall, John B.	Wolf Point	Feb. 23, 1904
Rhone, A. R.	Plains	Apr. 1, 1904
Rood, G. L.	Ridgelawn	Feb. 23, 1904
Ross Wm. B.	Thompson	May 1, 1905
Sample, H. A.	Glendive	Nov. 11, 1905
Sands, W. B.	Chinook	July 1, 1905
Scott, F. H.	Clear Creek	July 1, 1905
Shanley, Walter	Glasgow	Mar. 23, 1906
Simpson, G. H.	Columbus	Sept. 27, 1904
Smith, W. Y.	Bozeman	Dec. 7, 1906
Skillman, C. N.	Big Timber	July 1, 1905
Smith, W. G.	Darby	Mar. 7, 1903
Smith, W. P.	Missoula	July 1, 1905
Spangler, Maurice	Chester	Sept. 17, 1906
Stevenson, B. R.	Wisdom	Mar. 4, 1906
Sterling, F. P.	Helena	Sept. 21, 1904
Sullivan, Jeremiah	Fort Benton	July 1, 1905
Sullivan, M. J.	Kalispell	Nov. 14, 1904
Taylor, C. E.	Saco	Feb. 8, 1906
Thompson, H. R.	Helena	Nov. 18, 1905
Tracy, M. O.	Ekalaka	May 28, 1903
Vagg, H. A.	Saco	Dec. 4, 1905
Vennum, Geo. W.	Harlem	Jan. 30, 1905
Walling, W. H.	Decker	Sept. 19, 1904
Warner, A. C.	Chouteau	July 1, 1905
Whitney, L.	Joliet	June 26, 1903
Wilcox, J. M.	Shelby	Jan. 26, 1903
Willis, John	Glasgow	May 28, 1903

Name	Address	Appointed
Wilson, J.	Malta	Jan. 12, 1903
Wisner, G. S. E.	Anaconda	Feb. 4, 1905
Wooldridge, W. M.	Hinsdale	Apr. 18, 1903
Urner, Benjamin	Harlowton	Jan. 19, 1906

Time and place of holding courts—First Mondays in April and November at Helena. First Tuesdays in February and September at Butte. Frst Mondays in May and October at Great Falls.

Referees In Bankruptcy

Number of District and Name	Residence	Counties in District	Appointed
1—F. W. Haskins	Butte	Beaverhead, Deer Lodge, Powell, Madison, Silver Bow	Apr. 8, 1900
2—S. A. Balliet	Helena	Broadwater, Gallatin, Jefferson, Lewis and Clark, Meagher	Aug. 9, 1900
3—Henry A. Frith	Billings	Carbon, Custer, Dawson, Park, Sweet Grass, Yellowstone, Rosebud	June 23, 1900
4—J. E. Rockwood, Kalispell	Kalispell	Flathead	Jan. 13, 1906

Congressional Delegation.

Office	Name and Residence	Term Expires
United States Senator	Thomas H. Carter, Helena	Mar. 4, 1911
United States Senator	Joseph M. Dixon, Missoula	Mar. 4, 1913
Representative in Congress	Charles H. Pray, Fort Benton	Mar. 4, 1909

Representative Districts and Apportionment.

Each County is Entitled to one Senator.

Beaverhead	2	Park	2
Broadwater	2	Powell	1
Carbon	1	Ravalli	1
Cascade	5	Rosebud	1
Chouteau	2	Sanders	1
Custer	2	Silver Bow	12
Dawson	1	Sweet Grass	1
Deer Lodge	6	Teton	1
Fergus	2	Valley	1
Flathead	3	Yellowstone	1
Gallatin	3		
Granite	2		73
Jefferson	3	One Senator from each County	27
Lewis and Clark	7		
Madison	3	Total	100
Meagher	2		
Missoula	4		

Members of the Senate of the Tenth Legislative Assembly

Regular Session convenes at 12 o'clock noon, on the first Monday in January, each odd numbered year.

Limit of Session, sixty days. Term of office four years.

County	Name and Politics	Address	Elected
Beaverhead	B. F. White, R.*	Dillon	Nov. 8,1904
Broadwater	C. S. Muffly, D.	Winston	Nov. 5, 1905
Carbon	Samuel Glidden, D.*	Bridger	Nov. 8, 1904
Cascade	James Sanders, R.	Great Falls	Nov. 5, 1906
Chouteau	T. M. Everett, R.	Harlem	Nov. 5, 1906
Custer	Kenneth McLean, R*	Miles City	Nov. 8, 1904
Dawson	George W. McCone, R*	Reeta	Nov. 8, 1904
Deer Lodge	W. W. Harper, R*	Anaconda	Nov. 8, 1904
Fergus	H. M. Rea, R.	Gilt Edge	Nov. 5, 1906
Flathead	Thos. D. Long, D.	Kalispell	Nov. 5, 1906
Gallatin	J. C. McCarthy, D*	Bozeman	Nov. 8, 1904
Granite	George Metcalf, R.	Philipsburg	Nov. 5, 1906
Jefferson	Edward Cardwell, D.	Jefferson Island	Nov. 5, 1906
Lewis and Clark	harles Martien, D*	Helena	Nov. 8, 1904
Madison	Jacob Albright, R.	Virginia City	Nov. 5, 1906
Meagher	Clarence Tooley, R*	Two Dot	Nov. 8, 1904
Missoula	Edward Donlan, R.	Missoula	Nov. 5, 1906
Park	rthur W. Miles, R*	Livingston	Nov. 8, 1904
Powell	L. Beilenburg, R*	Deer Lodge	Nov. 8, 1904
Ravalli	Miles Romney, D.	Hamilton	Nov. 5, 1906
Rosebud	J. E. Edwards, R.	Forsyth	Nov. 5, 1906
Sanders	Charles E. Fairbanks, R.	Plains	Nov. 5, 1906
Silver Bow	W. H. Haviland, D.	Butte	Nov. 5, 1906
Sweet Grass	Charles McDonnell, R*	Melville	Nov. 8, 1904
Teton	William Cowgill, R.	Chouteau	Nov. 5, 1906
Valley	J. L. Truscott, D.	Glasgow	Nov. 5, 1906
Yellowstone	J. B. Annin, R.	Columbus	Nov. 5, 1906

*Holdover.

Members of the House of Representatives of the Tenth Legislative Assembly

Elected November 5, 1906. Term of office two years.

County	Name and Politics	Address
Beaverhead	Ernest O. Selway, R.	Dillon.
	Alpheus Decker, R.	Red Rock.
Broadwater	J. E. O'Connor, D.	Canton.
	C. A. Wilder, D.	Townsend.
Carbon	John Blewett, D.	Fromberg.
Cascade	A. H. Gray, R.	Great Falls.
	E. D. Kirwan, D.	Great Falls.
	William Cluston, D.	Great Falls.
	Eugene Harbordt, R.	Great Falls.
	Henry Seidler, R.	Great Falls.
Chouteau	T. A. Cummings, R.	Fort Benton.
	O. S. Goff, R.	Dupuyer.
Custer	O. C. Cato, D.	Miles City.
	C. B. Towers, R.	Miles City.
Dawson	D. C. Maxwell, R.	Glendive.
Deer Lodge	W. R. Allen, R.	Anaconda.
	G. B. English, R.	Anaconda.
	H. N. Blake, R.	Anaconda.
	Ed. Burke, D.	Anaconda.
	R. F. Fischer, D.	Anaconda.
	Frank Longstaff, D.	Anaconda.
Fergus	Rufus B. Thompson, R.	Lewistown.
	A. C. Greene, R.	Green.
Flathead	Fred Whiteside, D.	Kalispell.
	E. A. Logan, R.	Whitefish.
	B. J. Boorman, R.	Kalispell.
Gallatin	A. A. Cameron, R.	Bozeman.
	Ernest W. King, R.	Bozeman.
	W. A. Tudor, R.	Bozeman.
Granite	W. W. Kroeger, R.	Philipsburg.
	W. E. Moore, R.	Philipsburg.
Jefferson	V. E. Wilham, D.	Clancy.
	F. R. Warren, D.	Whitehall.
	A. I. Leighton, R.	Boulder.
Lewis and Clark	Moses Root, R.	Canyon Creek.
	John Wendel, R.	Helena.
	Leon Shaw, R.	Helena.
	J. H. Farmer, R.	Helena.
	G. H. Barbour, R.	Helena.
	E. D. Weed, R.	Helena.
	C. B. Miller, R.	Helena.
Madison	A. J. Bennett, R.	Virginia City.
	M. M. Duncan, D.	Virginia City.
	Archie Hyndman, R.	Sheridan.
Meagher	G. W. Harden,, R.	White Sulphur Springs.
	C. H. Sherman, D.	White Sulphur Springs.
Missoula	T. C. Marshall, R.	Missoula.
	Samuel M. Ross, R.	Missoula.
	Paul H. Gerber, R.	Missoula.
	Fred C. Morgan, R.	Missoula.
Park	T. M. Swindlehurst, D.	Livingston.
	H. J. Miller, R.	Livingston.
Powell	P. H. Griffin, R.	Sunset.
Ravalli	C. A. Miles, D.	Hamilton.
	A. Beckwith, R.	Hamilton.
Rosebud	J. W. Brewster, R.	Birney.
Sanders	E. J. Thompson, R.	Heron.
Silver Bow	William Scallon, R.	Butte.
	T. J. Bennetts, R.	Butte.
	C. C. McDonald, R.	Butte.
	L. A. Walker, R.	Butte.
	A. MacAuley, R.	Butte.
	Joseph Corby, R.	Butte.
	C. J. Cutler, R.	Butte.
	J. F. McManus, R.	Butte.
	P. H. Manchester, R.	Butte.
	Donald Campbell, R.	Butte.
	Gus H. Hess, R.	Butte.
	R. E. Powers, D.	Butte.
Sweet Grass	Robert Brownlee, R.	Melville.
Teton	S. L. Potter, R.	Shelby.
Valley	T. M. Patten, R.	Glasgow.
Yellowstone	A. A. Morris, R.	Billings.

Roster of the Senate.

Office.	Name of Officer.	County From.
President	Edwin C. Norris	Beaverhead.
President Pro Tempore	B. F. White	Beaverhead.
Secretary	H. K. Howry	Lewis and Clark.
Assistant Secretary	J. C. Farrington	Sweet Grass.
Chaplain	J. F. McNamee	Lewis and Clark.
Sergeant-at-Arms	C. Heaton	Park.
Ass't Sergeant-at-Arms	Fred. H. Jones	Cascade.
Journal Clerk	Miss Nena Herring	Cascade.
Ass't Journal Clerk	Miss Rose Sheehy	Lewis and Clark.
Enrolling Clerk	Mrs. Alice M. Zeiter	Yellowstone.
Engrossing Clerk	Miss Harriet Waldorf	Beaverhead.
Bill Clerk	Mrs. Josephine Wescott	Chouteau
Printing Committee	F. C. Pearson	Granite.
Doorkeeper	T. H. DuBois	Meagher.
Ass't Doorkeeper	J. C. McQuaig	Teton.
Ass't Doorkeeper	D. H. Bishop	Ravalli.
Watchman	Hector Newman	Dawson.
Watchman	Wm. H. Bushnell	Lewis and Clark.
Watchman	J. R. Franklin	Meagher.
Page	Claude Larson	Missoula.
Page	Chester Gareau	Lewis and Clark.
Page	Frank Burke	Lewis and Clark.

Roster of the House.

Office.	Name of Officer.	County From.
Speaker	E. W. King	Gallatin.
Speaker Pro Tempore	W. R. Allen	Deer Lodge.
Chief Clerk	Nathan Godfrey	Lewis and Clark.
Ass't Chief Clerk	Chas. B. Gibbs	Sanders.
Journal Clerk	F. H. Holloway	Gallatin.
Ass't Journal Clerk	Gertrude Pritchett	Lewis and Clark.
Enrolling Clerk	Barbara Higgins	Missoula.
Engrossing Clerk	A. Boussot	Cascade.
Bill Clerk	J. E. McIntire	Lewis and Clarke.
Stenographer to Chief Clerk	J. T. Laws	Lewis and Clarke.
Sergeant-at-Arms	T. J. Chope	Silver Bow.
Ass't Sergeant-at-Arms	A. L. Robertson	Park.
Chaplain	A. D. Raleigh	Lewis and Clarke.
Doorkeeper	A. B. Carbis	Jefferson.
Doorkeeper	S. P. Grim	Cascade.
Doorkeeper	M. Liphschutz	Silver Bow.
Watchman	Geo. Morton	Lewis and Clark.
Watchman	Wm. Dryburgh	Lewis and Clark.
Watchman	J. E. Templeton	Chouteau.
Post Master	Samuel Horvitch	Fergus.
Ass't Post Master	J. B. Loomis	Lewis and Clark.
Page	Wm. McEachran	Deer Lodge.
Page	Chas. Mack	Lewis and Clark.
Page	James Davies	Lewis and Clark.
Page	Fred. Bennett	Lewis and Clark.

State Officials

Office.	Name of Officer.	Residence.
Governor	Joseph K. Toole	Helena.
Lieutenant Governor	Edwin C. Norris	Dillon.
Secretary of State	Abraham N. Yoder	Butte.
State Treasurer	James H. Rice	Fort Benton.
Attorney General	Albert J. Galen	Helena.
State Auditor	Harry R. Cunningham	Butte.
Superintendent of Public Instruction..	Wilfred E. Harmon	Bozeman.
Clerk of Supreme Court.	John T. Athey	Great Falls.

STATE SUPREME COURT.

Office	Name	Elected	Term Expires
Chief Justice	Theo. Brantly	Nov. 8, 1904	Jan. 2, 1911
Associate Justice	Wm. L. Holloway	Nov. 8, 1904	Jan. 4, 1909
Associate Justice	Henry C. Smith	Nov. 5, 1906	Jan. 4, 1911

Clerk of Supreme Court, John T. Athey.
Marshall of Supreme Court, M. H. Race.
Stenographer, A. C. Schneider.
Attendant, W. O. Craig.

OFFICERS APPOINTED BY THE GOVERNOR.

Office	Name	Elected	Term Expires
Private Secretary to the Governor	Will Aiken*	Feb. 1, 1906	Jan. 2, 1909
Stenographer to the Governor	Mary A. Stokes	Jan. 2, 1905	Jan. 2, 1909
State Land Agent	Henry Neill	Aug. 13, 1905	Aug. 13, 1909
Register State Land Office	Jno. P. Schmit	Mar. 20, 1905	Mar. 20, 1909
Commissioner of the Bureau of Agriculture, Labor and Industry	J. A. Ferguson	Feb. 23, 1905	Feb. 23, 1909
State Examiner	T. E. Collins	Feb. 8, 1905	Feb. 8, 1909
Veterinary Surgeon	Morton E. Knowles	Feb. 8, 1905	Feb. 8, 1909
Inspector of Mines	William Walsh	Mar. 4, 1905	Mar. 4, 1909
Deputy Inspector of Mines	Wm. B. Orem	Mar. 4, 1905	Mar. 4, 1909
Coal Mine Inspector	J. B. McDermott	Nov. 28, 1905	Nov. 28, 1909
Boiler Inspector	Jas. H. Dailey	Feb. 17, 1905	Feb. 17, 1909
Assistant Boiler Inspector	Richard Moran	Feb. 17, 1905	Feb. 17, 1909
Assistant Boiler Inspector	Soren Anderson	Mar. 4, 1905	Mar. 4, 1909
Game and Fish Warden	Wm. F. Scott	Mar. 25, 1905	Mar. 25, 1909
State Engineer	John W. Wade	Mar. 7, 1903	Mar. 7, 1907
Sec'y Bureau of Child and Animal Protection..	Otto Schoenfeld	Mar. 4, 1905	Mar. 4, 1909
Ass't Sec'y Bureau Child and Animal Protection	Waller Shobe	Mar. 4, 1905	Mar. 4, 1909
Custodian Fort Ellis Indian Reservation	Andrew C. Harding	Jan. 30, 1897	.....
Custodian Fort Maginnis Indian Reservation..	Otto Anderson	Feb. 6, 1897	.....

* Appointed to fill vacancy caused by resignation of Lon Hoss.

NATIONAL GUARD OF MONTANA.

JOSEPH K. TOOLE, Commander-in-Chief.

GENERAL STAFF.

Rank and Name.	Office.	Station.
Brigadier General, A. M. Alderson ...	Adjutant General	Livingston.
Colonel, J. J. McGuinness	Inspector General	Anaconda.
Lieut.-Colonel, Tyler Thompson	Ass't Inspector General	Missoula.
Colonel, S. E. Atkinson	Quartermaster General	Great Falls.
Colonel, Thomas B. Miller	Commissary General	Helena.
Colonel, R. C. Monahan	Surgeon General	Butte.
Major, Jesse B. Roote	Judge Advocate	Butte.
Major, George E. Doll	Inspector Rifle Practice	Kalispell.
Captain, Walter Lennie-Smith	Chaplain	Livingston.
Captain, W. A. Moore	Surgeon	Big Timber.
Captain, W. C. Riddell	Ass't Surgeon	Helena.
Lieut.-Colonel, Lanier Napton	Aide-de-Camp	Butte.
Lieut.-Colonel, Harvey Bliss	Aide-de-Camp	Big Timber.
Lieut.-Colonel, Lyndsay B. Jobb	Aide-de-Camp	White Sul. Springs.

STATE BOARD OF EXAMINERS.

Members.	Title.	Organization.
Joseph K. Toole	Governor	President.
Abraham N. Yoder	Secretary of State	Secretary.
Albert J. Galen	Attorney General	Member.

Clerk of Board, George A. Irwin.

STATE FURNISHING BOARD.

Members.	Title.	Organization.
Joseph K. Toole	Governor	President.
Abraham N. Yoder	Secretary of State	Secretary.
Albert J. Galen	Attorney General	Member.

Clerk of Board, George A. Irwin.

STATE BOARD OF EQUALIZATION.

Members.	Title.	Organization.
Joseph K. Toole	Governor	President.
Abraham N. Yoder	Secretary of State ..	Secretary.
Albert J. Galen	Attorney General	Member.
James H. Rice	Treasurer	Member.
Harry R. Cunningham	Auditor	Member.

Clerk of the Board, J. J. Ryan.

STATE BOARD OF LAND COMMISSIONERS.

Members.	Title.	Organization.
Joseph K. Toole	Governor	President.
Wilfred E. Harmon	Supt. Public Instruction	Secretary.
Abraham N. Yoder	Secretary of State	Member.
Albert J. Galen	Attorney General	Member.

Clerk of the Board, Mrs. Randolph Thompson.

STATE BOARD OF PARDONS.

Members.	Title.	Organization.
Albert J. Galen	Attorney General	President.
Abraham N. Yoder	Secretary of State	Secretary.
Harry R. Cunningham	Auditor	Member.

Clerk of the Board, J. J. Ryan.

STATE BOARD OF PRISON COMMISSIONERS.

Members.	Title.	Organization.
Joseph K. Toole	Governer	President.
Abraham N. Yoder	Secretary of State	Secretary.
Albert J. Galen	Attorney General	Member.

Clerk of the Board, J. J. Ryan.

STATE BOARD OF COMMISSIONERS FOR THE INSANE.

Members.	Title.	Organization.
Joseph K. Toole	Governer	President.
Abraham N. Yoder	Secretary of State	Secretary.
Albert J. Galen	Attorney General	Member.

Clerk of the Board, J. J. Ryan.

STATE BOARD OF EDUCATION.

Members	Organization	Address	Appointed	Term Expires
Joseph K. Toole	President	Helena	Ex-Officio	
W. E. Harmon	Secretary	Helena	Ex-Officio	
Albert J. Galen	Member	Helena	Ex-Officio	
J. M. Evans	Member	Missoula	Feb. 26, 1906	Feb. 7, 1910
O. W. McConnell	Member	Helena	(*)	Mar. 2, 1907
C. R. Leonard	Member	Butte	Feb. 1, 1906	Feb. 1, 1910
G. T. Paul	Member	Dillon	Feb. 10, 1905	Feb. 10, 1909
E. O. Busenberg	Member	Lewistown	Feb. 10, 1906	Feb. 10, 1909
O. P. Chisholm	Member	Bozeman	Feb. 12, 1904	Feb. 12, 1908
S. D. Largent	Member	Great Falls	Feb. 8, 1904	Feb. 8, 1908
Chas. N. Kessler	Member	Helena	Feb. 10, 1905	Feb. 10, 1909

Secretary of the Board, B. T. Hathaway.
* Appointed to fill vacancy caused by resignation of N. W. McConnell.

STATE BOARD OF TEXT BOOK COMMISIONERS.

Name	Address	Appointed	Term Expires
J. E. Monroe	Dillon	Mar. 14, 1903	Mar. 14, 1907
O. M. Harvey	Livingston	Mar. 14, 1903	Mar. 14, 1907
J. M. Hamilton	Bozeman	Mar. 14, 1903	Mar. 14, 1907
J. W. Leaning	W. Sul. Springs	Mar. 14, 1903	Mar. 14, 1907
J. G. McKay	(*)	June 9, 1905	Mar. 14, 1907
W. E. Harmon	Helena	Jan. 2, 1905	Jan. 2, 1909
B. T. Hathaway	Helena	Jan. 2, 1905	Jan. 2, 1909

* Permanently removed from the State.

CAREY LAND ACT BOARD.

Members.	Title.	Address.
John W. Wade	State Engineer	Helena.
Abraham N. Yoder.	Secretary of State	Helena.
Timothy E. Collins	State Examiner	Helena.

Clerk of the Board, Thomas J. Todd.

STATE LAW LIBRARY BOARD OF TRUSTEES.

Members	Organization	Address	Appointed	Term Expires
Theodore Brantly	President	Helena	Ex-Officio	Jan. 2, 1911
Wm. L. Holloway	Member	Helena	Ex-Officio	Jan. 4, 1909
Henry C. Smith	Member	Helena	Ex-Officio	Jan. 2, 1911
H. R. Cunningham	Member	Helena	Ex-Officio	Jan. 2, 1909
A. N. Yoder	Secretary	Helena	Ex-Officio	Jan. 2, 1909

Librarian, A. K. Barbour.

STATE HISTORICAL AND MISCELLANEOUS LIBRARY BOARD OF TRUSTEES.

Members	Organization	Address	Appointed	Term Expires
Massena Bullard	President	Helena	Feb. 15, 1905	Feb. 15, 1909
J. M. Boardman	Member	Helena	Mar. 4, 1905	Mar. 4, 1909
N. B. Holter	Member	Helena	Feb. 15, 1905	Feb. 15, 1909
David Hilger	Member	Lewistown	Feb. 15, 1905	Feb. 15, 1909
Albert I. Loeb	Member	Helena	Feb. 15, 1905	Feb. 15, 1909

Secretary and Librarian, Laura E. Howey.

STATE BOARD OF PHARMACY.

Members	Address	Appointed	Term Expires
Sid J. Coffee	Missoula	Mar. 25, 1904	Mar. 25, 1907
Alfred Whitworth	Deer Lodge	Jan. 30, 1905	Jan. 10, 1908
Louis Dreibelbis	Butte	Mar 30, 1906	Mar. 23, 1909

STATE BOARD OF MEDICAL EXAMINERS.

Members	Address	Appointed	Term Expires
R. D. Alton	Livingston	Feb. 10, 1905	Feb. 10, 1911
G. D. Bryant	Butte	Mar. 2, 1903	Mar. 2, 1910
E. E. Crutcher	Great Falls	Sept. 26, 1902	Sept. 26, 1909
I. D. Freund	Butte	Mar. 27, 1901	Mar. 27, 1908
G. H. Barbour	Helena	Dec. 31, 1899	Dec. 31, 1906
W. C. Riddell	Helena	Dec. 20, 1905	Jan. 1, 1913
Francis J. Adams	Great Falls	Dec. 23, 1905	Feb. 9, 1912

STATE BOARD OF OSTEOPATHY.

Members	Address	Appointed	Term Expires
Chas. W. Mahaffay	Helena	Feb. 10, 1905	Feb. 10, 1909
Sylvester A. Kennedy	Butte	Apr. 2, 1904	Mar. 27, 1908
O. B. Prickett	Billings	May 13, 1903	May 13, 1907

BOARD OF DENTAL EXAMINERS.

Members	Address	Appointed	Term Expires
W. A. Tudor	Bozeman	Feb. 16, 1905	Feb. 10, 1910
C. H. Head	Helena	Feb. 21, 1905	Apr. 5, 1909
B. J. Keenan	Butte	Mar. 2, 1903	Mar. 2, 1908
D. J. Wait	Helena	June 23, 1902	June 23, 1907
G. W. Pelzer	Great Falls	July 10, 1906	Mar. 27, 1911

STATE BOARD OF HEALTH.

Members	Organization	Address	Appointed	Term Expires
Joseph K. Toole		Helena	Ex-Officio....	
Albert J. Galen		Helena	Ex-Officio....	
John W. Wade		Helena	Ex-Officio....	
Wm. Treacy	President	Helena	Feb. 15, 1905	Feb. 10, 1909
T. J. Sullivan	Member	Butte	Feb. 15, 1905	Feb. 15, 1909
Leroy Southmayd	Member	Great Falls	Mar. 16, 1903	Mar. 16, 1905
T. D. Tuttle	Secretary	Billings	Mar. 2, 1903	Mar. 28, 1905

BOARD OF COMMISSIONERS OF BUILDING AND LOAN ASSOCIATIONS.

Members	Address	Appointed	Term Expires
D. E. Swinehart	Helena	Feb. 15, 1905	Feb. 15, 1909
Samuel Kennett	Helena	Feb. 15, 1905	Feb. 15, 1909
C. K. Wells	Butte	Feb. 15, 1905	Feb. 15, 1909

STATE BOARD OF CHARITIES AND REFORM.

Members	Address	Appointed	Term Expires
D. B. Price	Stevensville	Jan. 25, 1904	Mar. 2, 1907
M. L. Rickman	Bozeman	Feb. 10, 1905	Feb. 10, 1911
W. W. Van Orsdal	Great Falls	Feb. 10, 1905	Feb. 10, 1911

STATE INSANE ASYLUM.

Title.	Location.	Operated.	Contractors.
State Insane Asylum	Warm Springs	By Contract	Mitchell and Mussigbrod.

STATE PRISON.

Title.	Location.	Operated.	Contractors.
Western State Prison	Deer Lodge	By Contract	Conley and McTague.

STATE BOARD OF HORTICULTURE.

Members	Address	Appointed	Time Expires
Joseph K. Toole	Helena	Ex-Officio	
Fred. Whiteside, Sec'y	Kalispell	By the Board	
C. C. Willis	Plains	Mar. 9, 1903	Mar. 9, 1906
O. C. Estey	Big Fork	Apr. 23, 1903	Mar. 9, 1907
Henry White	Billings	June 29, 1903	Mar. 9, 1907
T. T. Black	Whitehall	Mar. 13, 1905	Mar. 20, 1909
R. N. Sutherlin	Great Falls	Mar. 6, 1906	Mar. 10, 1910
W. J. Teidt	Darby	Apr. 24, 1906	Mar. 10, 1910

FRUIT INSPECTORS.

First District—	Name.	Residence.
Yellowstone	C. J. Gardner	Billings
Park	J. W. Swindlehurst	Livingston
Second District—		
Gallatin	Dr. J. A. Madden	Bozeman
Silver Bow	Joseph W. Wallish	33 Hirbour Blk., Butte
Lewis and Clark	Fred Holroyd	Helena
Beavedhead	E. T. Brook	Dillon
Third District—		
Cascade	Allen Pierce	Great Falls
Valley	James T. Farris	Hinsdale
	L. H. Burrington	Glasgow
	Cecil E. Taylor	Saco
	J. E. Bruegger	Culbertson
Chouteau	H. Earl Clack	Havre
Fourth District—		
Missoula	H. C. B. Colville	Missoula
	C. H. Mott	Missoula
Deer Lodge	Phil E. Randon	Anaconda
Fifth District—		
Ravalli	W. J. Teidt	Darby
Sixth District—		
Flathead	Fred Hartman	Kalispell
	John W. Frost	Eureka
	George H. Davis	Troy

UNIVERSITY OF MONTANA—MISSOULA.
EXECUTIVE COMMITEE.

Members.	Organization.	Address.
J. H. T. Ryman	President	Missoula.
T. C. Marshall	Secretary	Missoula.
Hiram Knowles	Member	Missoula.

UNIVERSITY OF MONTANA, FACULTY.

Oscar J. Craig, A. M. Ph. D.	President.
Cynthia E. Reiley, B. S.	Professor of Mathematics.
W. M. Aber, A. B.	Professor of Latin and Greek.
Frederic C. Scheuch, B. M., A. C.	Professor of Modern Languages.
Morton J. Elrod, A. M.	Professor of Biology.
Robert Sibley, A. B.	Professor of Mechanical Engineering.
Wm. F. Book	Professor of Psychology and Method.
Frances Corbin, B. L.	Professor of English Literature
William D. Harkins, A. B.	Professor of Chemistry.
Jesse P. Rowe, M. S.	Professor of Physics and Geology.
Eloise Knowles, Ph. B.	Instructor in Drawing and Assistant in English
Fred W. Schule	Director of Gymnasium.
Mrs. Blanch Whittaker	Director of Musical School.
Alice Young	Dean of Women.
Anna F. Carter	Assistant in Preparatory School.
Ruth Elsie Kellogg	Instructor in Elocution and Physical Culture.
Ralph Gilham	Laboratory Assistant in Chemistry.
Fred Buck	Laboratory Assistant in Mechanical Engineering.
Josiah Moore	Laboratory Assistant in Biology.
Joseph W. Striet	Laboratory Assistant in Physics.
Gertrude Buckhouse	Librarian.

STATE SCHOOL OF MINES—BUTTE.

BOARD OF TRUSTEES.

Member	Organization	Address	Term Expires
H. L. Frank	Chairman	Butte	Jan. 1, 1908
H. C. Hopkins	Secretary	Butte	
W. A. Clark, Jr.	Treasurer	Butte	Jan. 1, 1908
Charles Mattison	Member	Butte	Jan. 1, 1908
John D. Slemons	Member	Butte	Jan. 1, 1910
James R. Thompson	Member	Butte	Jan. 1, 1910

COMMITTEE ON SCHOOL OF MINES.

E. O. Busenberg. G. T. Paul.

FACULTY.

C. H. Bowman, M. S.	President and Professor of Mechanics.
Alexander B. Winchell, Univ. of Paris	Professor of Mineralogy and Geology.
George W. Craven, B. S.	Professor of Mathematics and Drawing.
Theodore Simons, C. E., E. M.	Professor of Mining Engineering.
Charles L. Bryden, E. M.	Professor of Chemistry and Metallurgy.
John B. Clayberg, L. L. B.	Lecturer on Mining Law.
Lester J. Hartsell, E. M.	Assistant Professor of Chemistry.
C. E. Corey, E. M.	Instructor in Chemistry and Metallurgy.
Charles T. Kirk	Instructor in Geology.

STATE NORMAL COLLEGE—DILLON.

EXECUTIVE BOARD.

Members	Address	Appointed	Term Expires
John F. Bishop	Dillon	Mar. 16, 1905	Mar. 20, 1909
J. B. Poindexter	Dillon	Mar. 16, 1905	Mar. 20, 1909
A. L. Stone	Dillon	Mar. 16, 1905	Mar. 20, 1909
Emerson Hill	Red Rock	Mar. 1, 1906	Mar. 20, 1909
B. F. White	Dillon	Mar. 20, 1901	Mar. 20, 1905

STATE NORMAL COLLEGE, FACULTY.

Henry H. Swain, Ph. D.	President and Professor of Economics.
Joseph E. Monroe, B. A.	Vice President and Professor of Physics and Chemistry.
Robert Clark, M. A.	Professor of Psychology and Biology.
Chas. J. Fenner, M. S.	Professor of Mathematics.
Chas. L. Robbins, M. A.	Professor of Methods and Supervisor of Training.
Carrie R. Squire, Ph. D.	Professor of Education.
Lucy H. Carson, M. A.	Professor of English.
Bertha Thormyer, M. Ph.	Professor of Latin and German.
Theodore Shoudy	Instructor in Manual Arts.
Laura M. Kress, B. L.	Instructor in History and Language.
Edward S. Luce	Director of the School of Music.
Elizabeth E. Luce	Instructor in Voice Culture.
Mrs. Anna W. Owsley	Matron.

MONTANA COLLEGE OF AGRICULTURE AND MECHANIC ARTS AND THE EXPERIMENT STATION—BOZEMAN.

EXECUTIVE BOARD.

Members	Organization	Address	Appointed	Term Expires
W. S. Hartman	President	Bozeman	Dec. 18, 1903	Dec. 18, 1907
John Maxey	Vice President	Bozeman	Dec. 18, 1903	Dec. 18, 1907
John M. Robinson	Member	Bozeman	Jan. 30, 1904	Jan. 30, 1908
E. B. Lamme	Member	Bozeman	Mar. 28, 1905	Mar. 28, 1909
E. Broox Martin	Member	Bozeman	Feb. 6, 1906	Feb. 11, 1910

FACULTY.

James M. Hamilton, M. S.	President, Professor of Philosophy and Economics.
Mrs. F. E. Marshall	Professor of Art.
William F. Brewer, A. M.	Professor of Latin and English.
Aaron H. Currier, A. M.	Professor of French and German.
Miss Lilla A. Harkins, M. S.	Professor of Domestic Science.
Robert A. Cooley, B. S.	Professor of Zoology and Entomology.
William D. Tallman, B S.	Professor of Mathematics.
Frederic B. Linfield, B. S. A.	Professor of Animal Husbandry
William M. Cobleigh, A. M.	Professor of Physics.
Joseph A. Thaler, E. E.	Professor of Electrical Engineering.
George B. Couper, M. E.	Professor of Mechanical Engineering.
Victor K. Chestnut, B. S.	Professor of Chemistry and Geology.
E. Tappan Tannatt, B. S.	Professor of Civil Engineering.
William J. Elliott, B. S. A.	Professor of Dairying, Assistant in Animal Industry.
Alfred Atkinson, B. S. A.	Professor of Agronomy.
Roy E. Fisher	Professor of Horticulture.
Charles S. Dearborn, B. S.	Ass't Professor of Mechanical Engineering in Charge of Shop.
Miss Mary A. Cantwell	Principal of Preparatory Department.
Miss Helen R. Brewer, A. B.	Instructor in History and Latin.
Dean B. Swingle, M. S.	Assistant Professor of Biology.
Mrs. Mable Kinney Hall, Ph. B.	Instructor in Public Speaking.
Edmund Burke	Assistant Professor in Chemistry.
Miss Florence Ballinger	Instructor in Sewing.
Wyatt W. Jones, S. B.	Instructor in Botany.
A. P. Alderson, B. S.	Instructor in Civil Engineering.
Henry C. Gardiner, M. D. C.	Instructor in Veterinary Science.
Frank W. Ham, M. S.	Instructor in Chemistry.
Mrs. Edna Gage	Assistant in Art.
F. Arthur Oliver	Head of Piano Department.
Miss Josephine Cook	Head of Vocal Department.
George W. Hey	Instructor in Violin.
Mrs. Mary K. Winter	Librarian.

BOARD OF DIRECTORS, SUB-EXPERIMENTAL STATION, BILLINGS.

Members	Address	Appointed	Term Expires
Christian Yegen	Billings	Mar. 7, 1903	Mar. 7, 1907
Oscar Gruwell	Billings	Mar. 7, 1903	Mar. 7, 1907
I. D. O'Donnell	Billings	Mar. 7, 1903	Mar. 7, 1907

STATE REFORM SCHOOL—MILES CITY.

Board of Trustees and Management.

Members	Address	Appointed	Term Expires
John S. Truscott	Miles City	Feb. 10, 1904	Feb. 10, 1908
Thomas Gibb	Miles City	Apr. 2, 1903	Apr. 20, 1907
Joseph E. Farnum	Miles City	Jan. 22, 1907	Apr. 1, 1908

Secretary for Trustees, Colville Territt.

MANAGEMENT AND INSTRUCTORS.

J. B. Hawkins	Director.
Mrs. J. B. Hawkins	Acting Matron.
John Fliechek	Shoemaker.
A. A. Strickland	Engineer.
E. A. Anderson	In charge of boy's building.
Ernest Hardie	Teacher for large boys.
A. R. McKee	Teacher for small boys.
Mrs. Ella Dickinson	Cook, Girls' building.
Odell Strickland	Night Watchman.
Urbain Bouchard	Officer Co. A.
Curtis Rinehart	Officer Co. B.

MONTANA SCHOOL FOR THE DEAF AND BLIND.

Board of Trustees and Management.

Members	Organization	Address	Appointed	Term Expires
Edward Ryan	President	Boulder	Dec. 19, 1904	Mar. 21, 1906
Charles Scharf	Secretary	Boulder	Mar. 21, 1902	Mar. 21, 1905
C. R. Stranahan	Member	Boulder	May 10, 1904	May 10, 1907

MANAGEMENT AND INSTRUCTORS.

L. E. Milligan	Superintendent.
Mrs. A. L. Harris	Matron.
T. C. Forrester	Teacher.
P. H. Brown	Teacher.
Sadie Lillard	Teacher.
Eva Hagyard	Teacher.
Lucile Menefee	Teacher.
Martha Russell	Teacher.
Clara Smith	Teacher.
Elsa Scharfenburg	Teacher.
E. V. Kemp	Boys' Supervisor.
Sue Saunders	Girls' Supervisor.
A. L. Ward	Physician.

STATE ORPHANS' HOME—TWIN BRIDGES.

Board of Trustees.

Members	Organization	Address	Appointed	Term Expires
Patrick Carney	President	Waterloo	Feb. 10, 1905	Feb. 10, 1909
W. M. Oliver	Secretary	Dillon	Feb. 10, 1905	Feb. 10, 1909
Martin Esler	Treasurer	Sheridan	Feb. 10, 1905	Feb. 10, 1909
A. J. Wilcomb	Member	Twin Bridges	Mar. 14, 1903	Mar. 27, 1907
Amos Eastman	Member	Twin Bridges	Mar. 14, 1903	Mar. 27, 1907

MANAGEMENT AND EMPLOYEES.

Wiley Mountjoy	Superintendent.
Mrs. Jessie Cowan	Matron.
Mrs. J. J. Griffith	Ass't Matron.
Miss Maud Maguire	Teacher.
Miss Jessie Spencer	Teacher.
Miss Eunice Spencer	Teacher.
Mrs. C. M. Nicholson	Cottage Matron.
Miss Rose Carney	Cottage Matron.
Miss Edith Winegard	Cottage Matron.
Mrs. Lydia Emmerson	Day Nurse.
Mrs. Edna Caroway	Night Nurse.
Henry Henrich	Engineer.
Jacob Sayger	Farmer.

BOARD OF MANAGERS SOLDIERS' HOME—COLUMBIA FALLS.

Members	Organization	Address	Appointed	Term Expires
C. B. Miller	President	Helena	Apr. 18, 1903	Apr. 18, 1907
Martin Maginnis	Secretary	Helena	Apr. 14, 1905	Apr. 18, 1909
Albert Ingraham	Member	Columbia Falls	Feb. 10, 1905	Apr. 18, 1909
John L. Sloan	Member	Missoula	Apr. 18, 1903	Apr. 18, 1907
A. J. Fisk	Member	Helena	Ex-Officio. Com. G. A. R	

Commandant at Home, Captain H. S. Howell.

STATE BOARD OF PARK COMMISSIONERS—GREAT FALLS.

Members	Address	Appointed	Term Expires
B. B. Kelley	Great Falls	May 1, 1905	May 1, 1907
F. P. Atkinson	Great Falls	May 19, 1906	May 19, 1907
Ransom Cooper	Great Falls	May 19, 1906	May 19, 1908
C. N. Dickinson	Great Falls	May 19, 1906	May 19, 1908
H. C. Ewing	Great Falls	May 24, 1906	May 1, 1908
O. F. Wadsworth, Jr.	Great Falls	May 22, 1906	May 1, 1907

STATE BOARD OF PARK COMMISSIONERS—HELENA.

Members	Address	Appointed	Term Expires
H. O. Farris	Helena	Apr. 21, 1904	May 1, 1906
Geo. L. Ramsey	Helena	Apr. 21, 1904	May 1, 1906
E. N. Brandegee	Helena	May 1, 1906	May 1, 1908

STATE BOARD OF STOCK COMMISSIONERS.

County.	Name.	Address.
Beaverhead	Martin Barrett	Dillon.
Broadwater	J. E. O'Connor	Townsend.
Carbon	J. N. Tolman	Red Lodge.
Cascade	James T. Stanford	Great Falls.
Chouteau	C. J. McNamara	Fort Benton.
Custer	John M. Holt	Miles City.
Dawson	W. F. Jordan	Glendive.
Deer Lodge	W. M. Montgomery	Anaconda.
Fergus	Frank Stephens	Lewistown.
Flathead	John Herman	Dayton.
Gallatin	H. H. Sappington	Sappington.
Granite	James McDonel	Philipsburg.
Jefferson	Edward Cardwell	Boulder.
Lewis and Clark	John T. Murphy	Helena.
Madison	Winthrop Raymond	Sheridan.
Meagher	John H. Freeser	Martinsdale.
Missoula	Michael Flynn	Missoula.
Park	A. N. Shearman	Livingston.
Powell	John N. Bielenberg	Deer Lodge.
Ravalli	T. J. Shannon	Hamilton.
Rosebud	Joseph T. Brown	Birney.
Sanders	J. A. McGowan	Plains.
Silver Bow	Jeff Lavelle	Butte.
Sweet Grass	W. P. Franklin	Big Timber.
Teton	W. K. Flowerree	Lowry.
Valley	M. E. Milner	Malta.
Yellowstone	David Fratt	Billings.

SHEEP COMMISSIONERS.

County.	Name.	Address.
Beaverhead	George W. French	Dillon.
Broadwater	Jeff Doggett	Johnson.
Carbon	D. G. O'Shea	Red Lodge.
Cascade	H. C. Ewing	Great Falls.
Chouteau	George B. Bourne	Hill.
Custer	Frank D. O'Neill	Miles City.
Dawson	William Lindsay	Glendive.
Deer Lodge	John Wenger	Anaconda.
Fergus	B. C. White	Garneill.
Flathead	W. F. Mulaney	Kalispell.
Gallatin	John F. Work	Bozeman.
Granite	Lee C. Degenhart	Philipsburg.
Jefferson	E. J. Stanley	Whitehall.
Lewis and Clark	William J. Bickett	Helena.
Madison	Henry W. Buford	Ennis.
Meagher	J. E. Bower	Oka.
Missoula	D. R. Maclay	Lo Lo.
Park	S. O'N. C. Brady	Meyersburg.
Powell	William Williams	Deer Lodge.
Ravalli	J. L. Humble	Corvallis.
Silver Bow	Herman Diestal	Butte.
Sweet Grass	A. B. Coit	Big Timber.
Teton	W. K. Flowerree	Lowry.
Valley	L. H. Mills	Saco.
Yellowstone	A. C. Logan	Billings.

SHEEP INSPECTORS.

County.	Name.	Address.
Beaverhead	George Gleed	Lima.
Broadwater	Jeff Doggett	Johnson.
Carbon	Frank L. Clark	Red Lodge.
Chouteau	D. A. Smith	Hinsdale.
	Robt. Gordon	Sunnyside.
Custer	Dan H. Bowman, Regular	Knowlton.
	W. S. Snell, Special	Miles City.
	Richard Turbiville, Special	Midland.
Dawson	James Corson	Glendive.
Deer Lodge	Dr. A. H. Cheney	Anaconda.
Fergus	B. C. White	Garneill.
Gallatin	John F. Work	Bozeman.
Granite	Lee C. Degenhart	Philipsburg.
Madison	L. S. Briggs	Bozeman.
Meagher	C. W. Cook	Unity.
Park	Dr. A. D. Knowles	Livingston.
	S. O'N. C. Brady	Meyersburg.
Powell	William Williams	Deer Lodge.
Ravalli	B. S. Shaffin	Corvallis.
Rosebud	Andrew P. Tadsen	Forsyth.
Sweet Grass	Glen M. Parker	Big Timber.
Silver Bow	Dr. A. H. Cheney	Anaconda.
Valley	D. A. Smith	Hinsdale.

DIRECTORY OF COUNTY OFFICIALS.

BEAVERHEAD

COUNTY SEAT—DILLON.

Fifth Judicial District. Classification Sixth.

Office.	Name.	Politics.
District Judge	Lew L. Callaway	Republican.
Sheriff	Marmaduke Gist	Democrat.
Treasurer	William F. Cashmore	Republican.
Clerk and Recorder	John S. Baker	Republican.
Assessor	Phil Anderegg	Republican.
Clerk of District Court	F. A. Hazelbaker	Republican.
Attorney	Henry R. Melton	Democrat.
Superintendent of Public Schools	Alice Herr	Democrat.
Coroner	M. A. Walker	Republican.
Public Administrator	A. A. Elliott	Republican.
Surveyor	Pearl I. Smith	Republican.
County Commissioners	William C. Orr, Six yrs.	Democrat.
	C. W. Francis, Four yrs.	Republican.
	O. C. Gosman, Two yrs	Republican.
State Senator	Benjamin F. White	Republican.
Members House of Representatives	Alpheus Decker	Republican.
	Ernest O. Selway	Republican.

Justices of the Peace—Josephus Rich, Z. B. Yearian, Dillon; George Noble, W. H. Boule, Lima; Marcellus Pyle, Polaris; T. J. Murray, Wisdom; A. M. Madison, Dewey; L. D. Tibbets, Argenta; Mike Hegerty, Apex; John Steger, Bannack; T. B. Craver, Grant; H. C. Patterson, Dell; G. N. Laurence, Bowen; Chas. F. Lloyd, Jackson.

BROADWATER

COUNTY SEAT—TOWNSEND.

Ninth Judicial District. Classification Eighth.

Office.	Name.	Politics.
District Judge	W. R. C. Stewart	Democrat.
Sheriff	William T. Deadmond	Democrat.
Treasurer	Peter J. Meloy	Democrat.
Clerk and Recorder	John Doherty	Democrat.
Assessor	B. Williams	Democrat.
Clerk of District Court	Fred. Bubser	Democrat.
Attorney	John A. Matthews	Democrat.
Superintendent of Public Schools	Sallie McMahon	Democrat.
Coroner	Hamilton Richardson	Democrat.
Public Administrator	William H. Risk	Democrat.
Surveyor	Joseph Z. Stafford	Democrat.
County Commissioners	William P. George, Six yrs.	Democrat.
	Archie McMillan, Four yrs.	Democrat.
	John Hines, Sr., Two yrs.	Democrat.
State Senator	Charles S. Muffly	Democrat.
Members House of Representatives	John E. O'Connor	Democrat.
	C. A. Wilder	Democrat.

Justices of the Peace—Matt Small, Dennis Reardon, Winston; L. Read, Hassel; William Kitto, W. E. Spangler, Radersburg; W. H. Merrill, W. H. Ulm, Toston; William Wood, G. E. Pool, Townsend; J. W. Perkins, H. Keen, Canton; Addison Turner, Peter Latch, Mason.

CARBON

COUNTY SEAT—RED LODGE.

Sitxh Judicial District. Classification, Seventh.

Office.	Name.	Politics.
District Judge	Frank Henry	Republican.
Sheriff	Fred. S. Bachelder	Democrat.
Treasurer	W. C. Rae	Democrat.
Clerk and Recorder	G. L. Finley	Democrat.
Assessor	John Normile	Democrat.
Clerk of District Court	Herbert A. Simmons	Republican.
Attorney	Sydney Fox	Democrat.
Superintendent of Public Schools	Agnes B. Ross	Democrat.
Coroner	J. A. Underwood	Republican.
Public Administrator	E. B. Ames	Republican.
Surveyor	F. W. Hine	Republican.
County Commissioners	William Barclay, Six yrs	Republican.
	R. O. Morris, Four yrs	Republican.
	Robert Beattie, Two yrs	Republican.
State Senator	Samuel H. Glidden	Democrat.
Member House of Representatives	John Blewett	Republican.

Justices of the Peace—M. H. Lucas, W. F. Tinkcon, Red Lodge; J. M. Willis, Joliet; C. E. Day, Fishtail; John Woodcock, Belfy; Robt. C. Howard, Absarokee; John Malonee, Fromberg.

CASCADE

COUNTY SEAT—GREAT FALLS.

Eighth Judicial District. Classification, Second.

Office.	Name.	Politics.
District Judge	Jere B. Leslie	Democrat.
Sheriff	Edward Hogan	Democrat.
Treasurer	Fred. L. Hill	Republican.
Auditor	Ferdinand C. Roosevelt	Republican.
Clerk and Recorder	David M. Wood	Democrat.
Assessor	W. H. Harrison	Republican.
Clerk of District Court	C. C. Proctor	Republican.
Attorney	J. W. Speer	Republican.
Superintendent of Public Schools	Lucy A. Major	Republican.
Coroner	Charles A. Brady	Democrat.
Public Administrator	Charles Wegner	Democrat.
Surveyor	B. D. Whitten	Republican.
County Commissioners	Kenneth B. McIvor, Six yrs	Democrat.
	Thomas Curry, Four yrs	Republican.
	Peter Johnson, Two yrs	Democrat.
State Senator	James Sanders	Republican.
Members House of Representatives	A. H. Gray	Republican.
	E. D. Kirwan	Democrat.
	William Cluston	Democrat.
	Eugene Harbordt	Republican.
	Henry Seidler	Republican.

Justices of the Peace—W. H. Safford, W. H. Race, Great Falls; Jos. Hathorn, Sand Coulee; T. W. McKeone, Stockett; John Q. Dempsey, Belt; J. W. Humphrey, Neihart; Melvi Rowe, Cascade, S. T. Getts, Sun River; J. H. Rundel, Manchester M. L. Lynch, Geyser; E. L. Parker, Truly; J. C. Bundy, Kibby; J. C. Lilly, Barker.

CHOUTEAU.

COUNTY SEAT—FORT BENTON.

Twelfth Judicial District. Classification, Fourth.

Office.	Name.	Politics.
District Judge	John W. Tatten	Democrat.
Sheriff	Frank McDonald	Republican.
Treasurer	L. O. Hudson	Democrat.
Clerk and Recorder	W. R. Leet	Republican.
Assessor	Henry Greisbach	Republican.
Clerk of District Court	Charles H. Boyle	Republican.
Attorney	Florian A. Carnal	Republican.
Superintendent of Public Schools	Agnes H. Atkinson	Republican.
Coroner	D. S. McKenzie	Republican.
Surveyor	A. W. Merrifield	Republican.
County Commissioners	Olaf Skylstead, Six yrs.	Republican.
	Jerre Sullivan, Four yrs.	Republican.
	Alexander Ross, Two yrs	Republican.
State Senator	T. M. Eevrett	Republican.
Members House of Representatives	Thomas A. Cummings	Republican.
	O. S. Goff	Republican.

Justices of the Peace—Dudley Jones, Geo. W. Vennum, Harlem; Geo. L. Bowles, D. L. Baird, Zortman; I. S. Frey, Samuel Houston, Chinook; W. B. Pyper, Ed. M. Allen, Havre; A. S. Christie, Big Sandy; L. E. Burson, Whitlash; Jno. McDowell, Gold Butte; N. T. Chemidlin, Fort Benton; Maurice Spangler, Chester; W. S. McCord, Highwood.

CUSTER.

COUNTY SEAT—MILES CITY.

Seventh Judicial District. Classification, Sixth.

Office.	Name.	Politics.
District Judge	Charles H. Loud	Republican.
Sheriff	W. E. Savage	Republican.
Treasurer	A. H. Swerdfiger	Republican.
Clerk and Recorder	H. B. Darnall	Republican.
Assessor	George Robbins	Republican.
Clerk of District Court	Alex. T. McAusland	Republican.
Attorney	S. Walker	Republican.
Superintendent of Public Schools	Mary L. Wilson	Republican.
Coroner	F. S. Grey	Republican.
Public Administrator	A. W. Lucas	Republican.
Surveyor	B. M. Mellum	Republican.
County Commissioners	J. W. Stith, Six yrs	Republican.
	Chas. Huckins, Four yrs	Republican.
	Jos. Bateman, Two yrs	Republican.
State Senator	Kenneth McLean	Republican.
Members House of Representatives	C. B. Towers	Republican.
	O. C. Cato	Democrat.

Justices of the Peace—John Gibb, T. R. Swift, Miles City; W. E. Kinney, Terry; George Heggen, Ekalaka; J. J. Zimmerman, Five Mile.

DAWSON.

COUNTY SEAT—GLENDIVE.
Seventh Judicial District. Classification, Sixth.

Office.	Name.	Politics.
District Judge	Charles H. Loud	Republican.
Sheriff	Andrew Larson	Democrat.
Treasurer	W. H. Frank	Republican.
Clerk and Recorder	R. L. Wyman	Republican.
Assessor	A. H. Johnson	Republican.
Clerk of District Court	H. A. Sample	Republican.
Attorney	Theodore Lentz	Republican.
Superintendent of Public Schools	Miss Tena Hackney	Republican.
Coroner	E. J. Berry	Republican.
Public Administrator	Fred. Hudson	Republican.
Surveyor	E. S. Baer	Democrat.
County Commissioners	Henry Dion, Six yrs.	Republican.
	H. Mullendore, Four yrs	Republican.
	John Meadors, Two yrs	Republican.
State Senator	George McCone	Republican.
Member House of Representatives	D. C. Maxwell	Republican.

Justices of the Peace—E. C. Leonard, G. N. Burdick, Glendive; E. A. Kenoyer, Geo. Rhode, Sr., Newlon; Sam Carlson, J. B. Brophy, Mingusville, Arthur Jordan, Jordan.

DEER LODGE.

COUNTY SEAT—ANACONDA.
Third Judicial District. Classification, Fifth.

Office.	Name.	Politics.
District Judge	George B. Winston	Republican.
Sheriff	T. J. Fleming	Republican.
Treasurer	E. J. Nadeau	Democrat.
Clerk and Recorder	Harvey A. Nell	Republican.
Assessor	George W. Peterson	Republican.
Clerk of District Court	Ira C. Gnose	Republican.
Attorney	John W. James	Republican.
Superintendent of Public Schools	Miss Mae McHugh	Republican.
Coroner	S. D. Allen	Republican.
Public Administrator	A. Short	Republican.
Surveyor	M. Knudson	Republican.
County Commissioners	C. A. Tuttle, Six yrs	Republican.
	Ed. Whitcraft, Four yrs	Republican.
	Patrick Kirley, Two yrs.	Republican.
State Senator	William W. Harper	Republican.
Members House of Representatives	W. R. Allen	Republican.
	G. B. English	Republican.
	H. N. Blake	Republican.
	E. Burke	Democrat.
	B. F. Fisher	Democrat.
	Frank Longstaff	Democrat.

Justices of the Peace—Frank Fitzgerald, H. S. Neal, Anaconda.

FERGUS.

COUNTY SEAT—LEWISTOWN.

Tenth Judicial District. Classification, Fifth.

Office.	Name.	Politics.
District Judge	Edwin K. Cheadle	Republican.
Sheriff	Edward Martin	Democrat.
Treasurer	Edward P. Chandler	Republican.
Clerk and Recorder	Chas. R. Meyersick	Democrat.
Assessor	John Marshall	Democrat.
Clerk of District Court	John B. Ritch	Democrat.
Attorney	Roy E. Ayers	Democrat.
Superintendent of Public Schools	Lena B. Newell	Democrat.
Coroner	Frederick F. Attix	Republican.
Public Administrator	S. W. Pennock	Republican.
Surveyor	Otto F. Wasmansdorf	Republican.
County Commissioners	Julius Peterson, Six yrs.	Democrat.
	William T. Neill, Four yrs	Republican.
	John Ross, Two yrs	Democrat.
State Senator	Henry M. Rae	Republican.
Members House of Representatives	Alex. C. Greene	Republican.
	Rufus B. Thompson	Republican.

Justices of the Peace—P. W. Korell, Judith; S. E. Haycroft, Ubet; D. H. Linebarger, Maginnis; J. S. Kelley, Maiden.

FLATHEAD.

COUNTY SEAT—KALISPELL.

Eleventh Judicial District. Classification, Fourth.

Office.	Name.	Politics.
District Judge	John E. Erickson	Democrat.
Sheriff	W. H. O'Connell	Democrat.
Treasurer	J. T. Hartt	Democrat.
Clerk and Recorder	C. T. Young	Democrat.
Assessor	C. H. Moody	Democrat.
Clerk of District Court	James K. Lang	Democrat.
Attorney	W. T. McKeowan	Democrat.
Superintendent of Public Schools	May Trumper	Republican.
Coroner	W. P. Sherman	Democrat.
Public Administrator	Hugh Swaney	Republican.
Surveyor	J. B. Gibson	Republican.
County Commissioners	R. W. Main, Six yrs	Democrat.
	J. E. White, Four yrs	Republican.
	Halmar Lewis, Two yrs	Republican.
State Senator	Thomas D. Long	Democrat.
Members House of Representatives	Fred Whiteside	Democrat.
	E. A. Logan	Republican.
	B. J. Boorman	Republican.

Justice of the Peace—F. Joe Rice, S. L. Wallace, Kalispell; Thomas Carroll, Columbia Falls; Jos. Reid, Whitefish; Geo. Hathaway, Libby; Geo. E. Davis, Troy.

GALLATIN.

COUNTY SEAT—BOZEMAN.
Ninth Judicial District. Classification, Fifth.

Office.	Name.	Politics.
District Judge	N. R. C. Stewart	Democrat.
Sheriff	E. M. Reynolds	Republican.
Treasurer	Jacob B. Weaver	Democrat.
Clerk and Recorder	William Brandenburg	Republican.
Assessor	Samuel N. Cowan	Democrat.
Clerk of District Court	Charles B. Anderson	Republican.
Attorney	Benjamin B. Law	Democrat.
Superintendent of Public Schools	Miss Pearl Dixon	Democrat.
Coroner	C. W. Jump	Republican.
Public Administrator	W. B. Burket	Republican.
Surveyor	Harvey Sloan	Democrat.
County Commissioners	William Henry Davis, Six yrs.	Democrat.
	William S. Irwin, Four yrs.	Democrat.
	Charles R. Waterman, Two yrs	Republican.
State Senator	J. C. McCarthy	Democrat.
Members House of Representatives	A. A. Cameron	Republican.
	Ernest W. King	Republican.
	W. A. Tudor	Republican.

Justices of the Peace—W. Y. Smith, George W. Ellis, Bozeman; David S. Burrows, Sedan; A. Hough, Hugo J. Gee, Belgrade; P. M. Abbot, Logan.

GRANITE.

COUNTY SEAT—PHILIPSBURG.
Third Judicial District. Classification, Eighth.

Office.	Name.	Politics.
District Judge	George B. Winston	Republican.
Sheriff	John D. Kennedy	Republican.
Treasurer	H. A. Featherman	Republican.
Clerk and Recorder	Edgar P. Ballard	Democrat.
Assessor	Jasper S. Huffman	Democrat.
Clerk of District Court	George R. Burks	Republican.
Attorney	David M. Durfee	Democrat.
Superintendent of Public Schools	Mrs. Lottie T. Irvine	Republican.
Coroner	W. T. Allison	Republican.
Public Administrator	Louis J. Hendrickson	Republican.
Surveyor	Charles F. Donyes	Republican.
County Commissioners	John W. Duny, Six yrs.	Democrat.
	Arthur A. Fairbairn, Four yrs	Democrat.
	Patrick Woodlock, Two yrs.	Democrat.
State Senator	George Metcalf	Republican.
Members House of Representatives	Walter W. Kroger	Republican.
	W. E. Moore	Republican.

Justices of the Peace—J. A. Buford, John S. Axtell, Philipsburg; Thomas Kistle, Granite; Otto Neubert, New Chicago; G. W. Commons, Bearmouth.

JEFFERSON.

COUNTY SEAT—BOULDER.

Fifth Judicial District. Classification, Seventh.

Office.	Name.	Politics.
District Judge	Lew L. Callaway	Republican.
Sheriff	P. J. Manning	Democrat.
Treasurer	John T. Murphy	Democrat.
Clerk and Recorder	Ernest R. McCall	Republican.
Assessor	Thomas F. Smith	Democrat.
Clerk of District Court	George Pfaff	Republican.
Attorney	D. M. Kelley	Democrat.
Superintendent of Public Schools	Miss Mosher	Democrat.
Coroner	Curtis Denbow	Republican.
Public Administrator	W. L. Beardsley	Democrat.
Surveyor	R. M. Cradle	Democrat.
County Commissioners	Farris Steele, Six yrs	Democrat.
	J. B. Maxfield, Four yrs	Democrat.
	L. Wanderer, Two yrs	Democrat.
State Senator	Edward Cardwell	Democrat.
Members House of Representatives	V. E. Wilham	Democrat.
	F. R. Warren	Democrat.
	A. I. Leighton	Republican.

Justices of the Peace—H. O. Johnson, J. M. Marcus, Basin; W. Shoemaker, James Brooks, Whitehall; W. D. Northrup, Wm. T. Sweet, Boulder; Casimir Kamber, J. G. Ryan, Clancy.

LEWIS AND CLARK.

COUNTY SEAT—HELENA.

First Judicial District. Classification, Second.

Office.	Name.	Politics.
District Judges	Henry C. Smith*	Republican.
	James M. Clements	Democrat.
Sheriff	James A. Shoemaker	Republican.
Auditor	T. H. Spratt	Republican.
Treasurer	Thomas B. Kirkendall	Republican.
Clerk and Recorder	Percy R. Witmer	Republican.
Assessor	F. E. Tibbetts	Republican.
Clerk of District Court	Sidney Miller	Democrat.
Attorney	Arthur P. Heywood	Republican.
Superintendent of Public Schools	Miss Lucinda Buck	Republican.
Coroner	S. S. Bennett	Republican.
Public Administrator	Samuel Schwab	Republican.
Surveyor	A. L. Irelan	Republican.
County Commissioners	J. J. Hindson, Six yrs	Republican.
	T. W. Richardson, Four yrs	Republican.
	J. H. Carmichael, Two yrs	Republican.
State Senator	Charles H. Martien	Democrat.
Members House of Representatives	Moses Root	Republican.
	John Wendel	Republican.
	E. D. Weed	Republican.
	C. B. Miller	Republican.
	Leon Shaw	Republican.
	G. H. Barbour	Republican.
	J. H. Farmer	Republican.

* Elected Associate Justice Supreme Court, 1906.

Justices of the Peace—F. L. Reece, Helena; S. W. Langhorne, Helena; Thomas Gibson, Stearns; C. C. Covington, Augusta; L. L. Lush, G. W. Parberry, Marysville.

MADISON.

COUNTY SEAT—VIRGINIA CITY.

Fifth Judicial District. Classification Sixth.

Office.	Name.	Politics.
District Judge	Lew L. Callaway	Republican.
Sheriff	Charles L. Kadell	Republican.
Treasurer	Robert N. Hawkins	Democrat.
Clerk and Recorder	John Z. Clem	Republican.
Assessor	Irwin P. Higbee	Republican.
Clerk of District Court	James G. Walker	Democrat.
Attorney	Samuel V. Stewart	Democrat.
Superintendent of Public Schools	Anna Mae Lowman	Democrat.
Coroner	Fred H. West	Republican.
Public Administrator	Charles H. McLean	Republican.
Surveyor	Ralph Bushnell	Republican.
County Commissioners	Charles C. Hill, Six yrs.	Democrat.
	William D. Husted, Four yrs.	Democrat.
	Mark W. Stout, Two yrs.	Democrat.
State Senator	Jacob Albright	Republican.
Members House of Representatives	Alden J. Bennett	Republican.
	Archibald Hyndman	Republican.
	M. M. Duncan	Democrat.

Justices of the Peace—N. D. Johnson, Virginia City; R. J. Ogden, Sheridan; L. B. Olds, Pony; A. B. Wakefield, Lakeview.

MEAGHER.

COUNTY SEAT—WHITE SULPHUR SPRINGS.

Tenth Judicial District. Classification, Seventh.

Office.	Name.	Politics.
District Judge	W. R. C. Stewart	Democrat.
Sheriff	George L. Williams	Democrat.
Treasurer	George Fowlie	Democrat.
Clerk and Recorder	Theodore Sarter	Republican.
Assessor	James H. Stewart	Democrat.
Clerk of District Court	A. C. Grande	Republican.
Attorney	W. L. Ford	Republican.
Superintendent of Public Schools	Roxie Higgins	Republican.
Coroner	D. McH. McKay	Democrat.
Public Administrator	J. T. Harry	Republican.
County Commissioners	M. T. Grande, Six yrs	Republican.
	Charles B. Catlin, Four yrs	Republican.
	George B. Naques, Two yrs.	Republican.
State Senator	Clarence P. Tooley	Republican.
Members of House of Representatives	George W. Harden	Republican.
	C. N. Sherman	Democrat.

Justices of the Peace—E. G. Hartfield, White Sulphur Springs; Arthur Weston, Harlowton; Albert Hangen, Castle.

MISSOULA.

COUNTY SEAT—MISSOULA.
Fourth Judicial District. Classification, Fifth.

Office.	Name.	Politics.
District Judge	Frederick C. Webster	Republican.
Sheriff	Hugh B. Campbell	Democrat.
Treasurer	Hugh C. Kennedy	Democrat.
Clerk and Recorder	W. H. Smith	Democrat.
Assessor	Daniel McQuarrie	Republican.
Clerk of District Court	R. W. Kemp	Republican.
Attorney	Thomas Nelson Marlowe	Democrat.
Superintendent of Public Schools	Retta Barnes	Republican.
Coroner	Charles H. Marsh	Republican.
Public Administrator	T. G. Hathaway	Republican.
Surveyor	Chauncey E. Woodworth	Democrat.
County Commissioners	Dennis T. Curran, Six yrs.	Democrat.
	Tyler Worden, Four yrs.	Republican.
	David Andrews, Two yrs.	Republican.
State Senator	Edward Donlan	Republican.
Members of House of Representatives	Thomas C. Marshall	Republican.
	Paul H. Gerber	Republican.
	Samuel M. Ross	Republican.
	Fred. C. Morgan	Republican.

Justices of the Peace—J. T. Phillips, L. N. Davis, Missoula; Mm. R. Brennan, Frenchtown; W. R. Streeter, Iron Mountain.

PARK.

COUNTY SEAT—LIVINGSTON.
Sixth Judicial District. Classification, Sixth.

Office.	Name.	Politics.
District Judge	Frank Henry	Republican.
Sheriff	Harry McCue	Democrat.
Treasurer	Joseph Brooks	Republican.
Clerk and Recorder	Ray H. Stevens	Republican.
Assessor	James H. Proffitt	Democrat.
Clerk of District Court	Arthur Davis	Republican.
Attorney	O. M. Harvey	Republican.
Superintendent of Public Schools	Miss Jennie B. Smith	Democrat.
Coroner	S. E. Laird	Republican.
Public Administrator	Chas. O. Krohne	Republican.
Surveyor	Charles T. Sacket	Republican.
County Commissioners	M. H. Lashorn, Six yrs	Republican.
	Erve G. Blair, Four yrs	Republican.
	Larry Link, Two yrs	Republican.
State Senator	A. W. Miles	Republican.
Members of House of Representatives	T. M. Swindlehurst	Democrat.
	H. J. Miller	Republican.

Justices of the Peace—Frank Bender, H. V. Church, Livingston; M. M. Black, Fridley; James Palmer, Electric; William Ralph, Aldridge; F. J. Dean, Gardiner; Gilbert Paterson, Cooke, Oscar Johnson, Jardine; George Bruckert, Lat.

POWELL.

COUNTY SEAT—DEER LODGE.
Third Judicial District. Classification, Seventh.

Office.	Name.	Politics.
District Judge	George B. Winston	Republican.
Sheriff	Harvey Fifer	Republican.
Treasurer	Jerome Wyckoff	Republican.
Clerk and Recorder	Warren E. Evans	Republican.
Assessor	John A. Shaw	Democrat.
Clerk of District Court	R. Lee Kelley	Democrat.
Attorney	S. P. Wilson	Democrat.
Superintendent of Public Schools	Maggie Jensen	Democrat.
Coroner	Albert Bien	Republican.
Public Administrator	Nathan Smith	Republican.
Surveyor	Lee Williams	Republican.
County Commissioners	George Cockrell, Six yrs	Democrat.
	W. H. Whitehill, Four yrs	Republican.
	J. E. Manley, Two yrs	Republican.
State Senator	J. Beilenberg	Republican.
Member House of Representatives	P. H. Griffin	Republican.

Justices of the Peace—Thomas W. Catlin, John Y. Batterton, Deer Lodge; W. B. Cline, Gold Creek; S. R. Rowley, Helmville.

RAVALLI.

COUNTY SEAT—HAMILTON.
Fourth Judicial District. Classification, Seventh.

Office.	Name.	Politics.
District Judge	Frederick C. Webster	Republican.
Sheriff	William Ward	Democrat.
Treasurer	Frank M. Lockwood	Republican.
Clerk and Recorder	George A. Reese	Republican.
Assessor	Francis B. Tanner	Republican.
Clerk of District Court	Arthur C. Baker	Republican.
Attorney	William P. Baker	Republican.
Superintendent of Public Schools	Jennie Adams	Republican.
Coroner	Karl H. Kellogg	Republican.
Public Administrator	Elias W. Odell	Republican.
Surveyor	Harrison S. Lord	Republican.
County Commissioners	John S. Treece, Six yrs	Democrat.
	Joseph Appolonio, Four yrs	Republican.
	Wesley Barcus, Two yrs	Republican.
State Senator	Miles Romney	Democrat.
Members of House of Representatives	Arthur Beckwith	Republican.
	Charles S. Miles	Democrat.

Justices of the Peace—W. P. Rhodebank, Darby; Frank J. Morris, E. C. Whaley, Hamilton; A. F. Holt, Grantsdale; J. J. Bond, Corvallis; S. Sedgwick, Stevensville.

ROSEBUD.

COUNTY SEAT—FORSYTH.

Seventh Judicial District. Classification, Sixth.

Office.	Name.	Politics.
District Judge	C. H. Loud	Republican.
Sheriff	R. J. Guy	Democrat.
Treasurer	Harry Butterfield	Republican.
Clerk and Recorder	R. J. Cole	Republican.
Assessor	J. W. Lane	Republican.
Clerk of District Court	D. J. Muri	Republican.
Attorney	George A. Horkan	Republican.
Superintendent of Public Schools	Lizzie M. Snook	Republican.
Coroner	James Haywood	Democrat.
Public Administrator	Lizzie M. Snook	Republican.
Surveyor	Charles B. Taber	Republican.
County Commissioners	F. S. Squier, Six yrs	Republican.
	T. W. Longley, Four yrs	Democrat.
	R. W. Blakesley, Two yrs	Republican.
State Senator	J. E. Edwards	Republican.
Member House of Representatives	G. W. Brewster	Republican.

Justices of the Peace—Ed. Adams, C. R. Dick, Forsyth; Henry Heyneman, Rancher.

SANDERS.

COUNTY SEAT—THOMPSON.

Fourth Judicial District. Classification, Seventh.

Office.	Name.	Politics.
District Judge	Frederick C. Webster	Republican.
Sheriff	John H. Massey	Democrat.
Treasurer	W. E. Christopher	Rep. and Ind.
Clerk and Recorder	W. D. McLaren	Republican.
Assessor	J. E. Knott	Republican.
Clerk of District Court	C. E. Livesay	Democrat.
Attorney	John Meany*	Democrat.
Superintendent of Public Schools	Ella M. Costlio	Democrat.
Coroner	Victor Seward	Republican.
Public Administrator	James Hylent	Republican.
Surveyor	E. S. Dorman	Republican.
County Commissioners	Axel Schulstad, Six yrs	Democrat.
	C. H. Doenges, Four yrs	Democrat.
	Wm. A. Beebe, Two yrs.	Dem. and Ind.
State Senator	C. E. Fairbanks	Republican.
Member House of Representatives	E. J. Thompson	Republican.

* Resigned.

Justices of the Peace—C. A. Peterson, B. F. Bowman, Plains; J. B. Pruden, Thompson.

SILVER BOW.

COUNTY SEAT—BUTTE.

Second Judicial District. Classification, First.

Office.	Name.	Politics.
District Judges	Jerry J. Lynch	Democrat.
	Michael Donlan	Dem and Rep.
	George M. Bourquin	Dem. and Rep.
Sheriff	C. S. Henderson	Republican.
Auditor	Gus. E. Stromme	Republican.
Treasurer	C. E. Meagher	Democrat.
Clerk and Recorder	Charles E. Scott	Republican.
Assessor	Patrick F. Boland	Republican.
Clerk of District Court	W. E. Davies	Fusion.
Attorney	James E. Murray	Democrat.
Superintendent of Public Schools	Margaret Hogan	Democrat.
Coroner	Jesse P. Stevens	Republican.
Public Administrator	Dan Buckley	Democrat.
Surveyor	R. A. McArthur	Republican.
County Commissioners	J. H. Cronin, Six yrs	Democrat.
	G. R. Brown, Four yrs	Democrat.
	James Tickell, Two yrs	Republican.
State Senator	W. H. Haviland	Democrat.
Members of House of Representatives	William Scallon	Republican.
	T. J. Bennetts	Republican.
	C. C. McDonald	Republican.
	L. A. Walker	Republican.
	A. MacAuley	Republican.
	Joseph Corby	Republican.
	J. Cutler	Republican.
	J. F. McManus	Republican.
	P. H. Manchester	Republican.
	Donald Campbell	Republican.
	Gus. H. Hess	Republican.
	R. E. Powers	Democrat.

Justices of the Peace—John Doran, 39 W. Granite St., Butte; Geo. Cooper, cor. Murray and Shields St., Butte; Pat Colligan, Wm. Millett, Walkerville; A. Gillette, Dan Schroder, South Butte; C. C. Rhodes, R. Ormsby, Meaderville; John W. Reid, Melrose.

SWEET GRASS.

COUNTY SEAT—BIG TIMBER.

Sixth Judicial District. Classification, Seventh.

Office.	Name.	Politics.
District Judge	Frank Henry	Republican.
Sheriff	Oscar A. Fallang	Republican.
Treasurer	Dick Budd	Republican.
Clerk and Recorder	Harry C. Allen	Republican.
Assessor	Ralph S. Jarrett	Republican.
Clerk of District Court	Harvey C. Pound	Republican.
Attorney	John E. Barbour	Republican
Superintendent of Public Schools	Mary R. Deegan	Republican.
Coroner	J. A. Mulkern	Republican.
Surveyor	D. J. Walvoord	Republican.
County Commissioners	George A. Loasby, Six yrs	Republican.
	John Rye, Four yrs	Republican.
	H. O. Kellogg, Two yrs	Republican.
State Senator	Charles McDonnell	Republican.
Member House of Representatives	Robert Brownlee	Republican.

Justices of the Peace—T. G. Shipton, Big Timber; Ed. Adam, Melville; J. E. Graves, Stillwater.

TETON.

COUNTY SEAT—CHOUTEAU.

Eleventh Judicial District. Classification, Sixth.

Office.	Name.	Politics.
District Judge	John E. Erickson	Democrat.
Sheriff	Kenneth McKenzie	Republican.
Treasurer	J. E. Webb	Republican.
Clerk and Recorder	A. C. Warner	Republican.
Assessor	E. A. Savory	Democrat.
Clerk of District Court	Sterling McDonald	Republican.
Attorney	Phil. I. Cole	Republican.
Superintendent of Public Schools	Miss Nellie R. Brown	Democrat.
Coroner	H. W. Power	Republican.
Public Administrator	William Chalmers	Republican.
Surveyor	John W. Shields	Republican.
County Commissioners	George F. Miller, Six yrs.	Republican.
	H. F. Hughes, Four yrs.	Republican.
	C. H. Pearson, Two yrs	Republican.
State Senator	William Cowgill	Republican.
Member House of Representatives	S. L. Potter	Republican.

Justices of the Peace—John E. DeHass, Ch outeau, F. H. Federhen, Dupuyer; H. F. Guth, Shelby.

VALLEY.

COUNTY SEAT—GLASGOW.

Twelfth Judicial District. Classification, Sixth.

Office.	Name.	Politics.
District Judge	John W. Tattan	Democrat.
Sheriff	S. C. Small	Democrat.
Treasurer	Lyman Barnes	Democrat.
Clerk and Recorder	W. B. Shoemaker	Republican.
Assessor	James Fox	Republican.
Clerk of District Court	Clarence C. Beede	Republican.
Attorney	John L. Slattery	Republican.
Superintendent of Public Schools	Faye Otis	Republican.
Coroner	C. A. Tillotson	Republican.
Public Administrator	James Harrah	Republican.
Surveyor	W. H. Mann	Republican.
County Commissioners	Andrew Davidson, Six yrs	Republican.
	William McBride Four yrs.	Republican.
	R. L. Cornwell, Two yrs.	Republican.
State Senator	J. L. Truscott	Democrat.
Member House of Representatives	Truman M. Patten	Republican.

Justices of the Peace—B. W. Brockway, W. I. Price, Malta; James T. Farris, Hinsdale; P. E. Kent, Glasgow; Thomas Courchene, Cul bertson.

YELLOWSTONE.

COUNTY SEAT—BILLINGS.

Seventh Judicial District. Classification, Fourth.

Office.	Name.	Politics.
District Judge	Chas. H. Loud	Republican.
Sheriff	James T. Webb	Democrat.
Treasurer	John W. Fish	Republican.
Clerk and Recorder	Ira L. Whitney	Republican.
Assessor	Albert P. Smith	Republican.
Clerk of District Court	Fred H. Foster	Democrat.
Attorney	Harry L. Wilson	Republican.
Superintendent of Public Schools	Mrs. M. M. Strang	Republican.
Coroner	G. H. Smith	Republican.
Public Administrator	W. F. Sylvester	Republican.
Surveyor	Henry Gerharz	Democrat.
County Commissioners	Gwen F. Burla, Six yrs	Democrat.
	M. W. Cramer, Four yrs	Republican.
	Chas. H. Newman, Two yrs	Republican.
State Senator	J. B. Annin	Republican.
Member House of Representatives	A. A. Morris	Republican.

Justices of the Peace—A. Fraser, F. L. Mann, Billings; E. L. Fenton, Laurel; Ed. W. Peck, Park City; H. W. Ostrander, Fattig; R. M. Jones, Musselshell; J. L. Fraser, Columbus; John Williamson, Junction; M. M. Klein, Round Up.

Postoffices in Montana.

Corrected to February 1, 1906.

(c. h.) indicates County Seat.

Absarokee ..... Carbon
Ada ..... Chouteau
Adams ..... Dawson
Adel ..... Cascade
Adobetown ..... Madision
Albright ..... Cascade
Alder ..... Madison
Aldridge ..... Park
Alhambra ..... Jefferson
Alma ..... Chouteau
Alta ..... Ravalli
Altyn ..... Teton
(Discontinued. Mail to Swiftcurrent.)
Alzada ..... Custer
Anaconda (c. h.) ..... Deer Lodge
Apex ..... Beaverhead
Argenta ..... Beaverhead
Arlee ..... Missoula
Armells ..... Fergus
Armington ..... Cascade
Arrow ..... Cascade
Ashfield ..... Valley
Ashland ..... Rosebud
Augusta ..... Lewis and Clark
Austin ..... Lewis and Clark
Avery ..... Chouteau
Avon ..... Powell
Babb ..... Teton
Baeth ..... Valley
Bainville ..... Valley
Baird ..... Missoula
Bald Butte ..... Lewis and Clark
(Discontinued. Mail to Marysville.)
Bannack ..... Beaverhead
Barr ..... Valley
Basin ..... Jefferson
Bearcreek ..... Carbon
Bearmouth ..... Granite
Beatrice ..... Chouteau
Beebe ..... Custer
Belfry ..... Carbon
Belgrade ..... Gallatin
Belknap ..... Sanders
Belleview ..... Teton
Belt ..... Cascade
Belton ..... Flathead
Bercail ..... Fergus
Bernice ..... Jefferson
(Discontinued. Mail to Basin.)
Bigelk ..... Meagher
Bigfork ..... Flathead
Big Sandy ..... Chouteau
Bigtimber (c. h.) ..... Sweet Grass
Billings (c. h.) ..... Yellowstone
Birdseye ..... Lewis and Clark
Birney ..... Rosebud
Blaine ..... Madison
Blatchford ..... Custer
Bonita ..... Missoula
Bonner ..... Missoula
Boulder (c. h.) ..... Jefferson
Boundary ..... Valley
Bowen ..... Beaverhead
Bowler ..... Carbon
Box Elder ..... Chouteau
Boyes ..... Custer
Bozeman (c. h.) ..... Gallatin
Brandenberg ..... Custer
Bridger ..... Carbon
Briston ..... Beaverhead
Broadus ..... Custer
(Discontinued. Mail to Moorhead.)
Brockton ..... Valley
Brookside ..... Chouteau
Browning ..... Teton
Bruffeys ..... Park
Burns ..... Dawson
Busby ..... Rosebud
Busteed ..... Sweet Grass
Butte (c. h.) ..... Silver Bow

BUTTE SUB-STATIONS.

South Butte.
No. 1, 50 Walnut St.
No. 2, 938 Main St.
No. 3, 343 E. Park.
No. 4, Granite and Alabama Streets.
No. 5, Utah Ave. and Aluminum Street.
No. 6, 27 W. Park St.
No. 7, 308 W. Aluminum Street.
No. 8, 1270 E 2nd Street.

Bynum ..... Teton
Cable ..... Deer Lodge
Camas ..... Sanders
Cameron ..... Madison
Canton ..... Broadwater
Canyon Creek ..... Lewis and Clark
Canyon Ferry ..... Lewis and Clark
Capitol ..... Custer
Carlton ..... Missoula
Cascade ..... Cascade
Castle ..... Meagher
Cedar ..... Custer
Central Park ..... Gallatin
Chance ..... Carbon
Chesnut ..... Gallatin
(Discontinued. R. D. from Bozeman.)
Chester ..... Chouteau
Chico ..... Park
Chimney Rock ..... Park
Chinook ..... Chouteau
Chouteau (c. h.) ..... Teton
Christina ..... Fergus
Circle ..... Dawson
Clancey ..... Jefferson
Clara ..... Fergus
Clearcreek ..... Chouteau
Clearwater ..... Powell
Clemons ..... Lewis and Clark
Cleveland ..... Chouteau
Clinton ..... Missoula

Clydepark ..... Park
Coberg ..... Chouteau
Cohagen ..... Dawson
Cokedale ..... Park
(Discontinued. Mail to Livingston.)
Coldspring ..... Jefferson
Collins ..... Teton
Coloma ..... Powell
Columbia Falls ..... Flathead
Columbus ..... Yellowstone
Como ..... Ravalli
Conley ..... Chouteau
Conner ..... Ravalli
Conrad ..... Teton
Contact ..... Park
Cooke ..... Park
Corbin ..... Jefferson
Corvallis ..... Ravalli
Cowan ..... Valley
Craig ..... Lewis and Clark
Creston ..... Flathead
Crow Agency ..... Rosebud
Culbertson ..... Valley
Custer ..... Yellowstone
Cut Bank ..... Teton
Darby ..... Ravalli
Dayton ..... Flathead
Dean ..... Carbon
Deborgia ..... Missoula
Decker ..... Rosebud
Deer Lodge (c. h.) ..... Powell
Dell ..... Beaverhead
Delpine ..... Meagher
Denton ..... Fergus
Desmet ..... Missoula
Dewey ..... Beaverhead
Diamond City ..... Broadwater
Dillon (c. h.) ..... Beaverhead
Divide ..... Silver Bow
Dixon ..... Missoula
Dodson ..... Chouteau
Dorsey ..... Meagher
Drummond ..... Granite
Dupuyer ..... Teton
East Helena ..... Lewis and Clark
Eddy ..... Sanders
Edgewater ..... Fergus
Ekalaka ..... Custer
Eldridge ..... Gallatin
Electric ..... Park
Elizabeth ..... Teton
Elkhorn ..... Jefferson
Elk Park ..... Jefferson
Elliston ..... Powell
Elso ..... Fergus
Emery ..... Powell
(Discontinued. Mail to Deer Lodge.)
Enid ..... Dawson
Ennis ..... Madison
Ericson ..... Custer
Essex ..... Flathead
Etna ..... Custer
Eureka ..... Flathead
Evans ..... Cascade
Evaro ..... Missoula
Everson ..... Fergus
Ewalt ..... Custer
Ewing ..... Carbon
Excie ..... Custer
(Discontinued. Mail to Ewalt.)
Fairview ..... Dawson
Fairbanks ..... Carbon
(Discontinued. Mail to Linley.)
Fallon ..... Custer
Family ..... Teton
Farlin ..... Beaverhead
(Discontinued. Mail to Apex.)
Farmington ..... Teton
Fattig ..... Yellowstone
Fergus ..... Fergus
Fishtail ..... Carbon
Fishtrap ..... Deer Lodge
Fivemile ..... Custer
Flandrem ..... Valley
Flatwillow ..... Fergus
Flesher ..... Lewis and Clark
Flint ..... Meagher
Florence ..... Ravalli
Forest ..... Missoula
Forestgrove ..... Fergus
Forsyth (c. h.) ..... Rosebud
Fortine ..... Flathead
Fort Assinniboine ..... Chouteau
Fort Benton (c. h.) ..... Chouteau
Fort Keogh ..... Custer
Fort Logan ..... Meagher
Fort Maginnis ..... Fergus
Fort Shaw ..... Cascade
Fox ..... Beaverhead
French Gulch ..... Deer Lodge
Frenchtown ..... Missoula
Fridley ..... Park
Fromberg ..... Carbon
Fullerton ..... Fergus
Fulton ..... Lewis and Clark
Galata ..... Chouteau
Gallop ..... Gallatin
Gardiner ..... Park
Garland ..... Custer
Garneill ..... Fergus
Garnet ..... Granite
Garrison ..... Powell
Gateway ..... Flathead
Gebo ..... Carbon
Geyser ..... Cascade
Gibson ..... Yellowstone
Gildford ..... Chouteau
Giltedge ..... Fergus
Glasgow (c. h.) ..... Valley
Glendive (c. h.) ..... Dawson
Glenwood ..... Broadwater
Goldcreek ..... Powell
Goldbutte ..... Chouteau
Golden ..... Carbon
Gossett ..... Dawson
Gould ..... Lewis and Clark
Graham ..... Custer
Granite ..... Granite
Grant ..... Beaverhead
Grantsdale ..... Ravalli
Grassrange ..... Fergus
Grayling ..... Gallatin
Great Falls (c. h.) ..... Cascade
Greene ..... Fergus
Gregson ..... Silver Bow
Greycliff ..... Sweet Grass
Hall ..... Granite
Hamilton (c. h.) ..... Ravalli
Hardy ..... Cascade
Harlem ..... Chouteau
Harlowton ..... Meagher
Harrisburg ..... Flathead
(Discontinued. Mail to Fortine.)
Harrison ..... Madison
Hathaway ..... Rosebud
Havre ..... Chouteau
Hays ..... Chouteau
Hedstrom ..... Dawson
(Discontinued. Mail to McMillan.)
Helena (c. h.) ..... Lewis and Clark

STATION.
No. 1. (Fort Harrison.)

Helmville ..... Powell
Henderson ..... Missoula
Heron ..... Sanders
Highwood ..... Chouteau

Hill ..... Chouteau
Hinsdale ..... Valley
Hockett ..... Custer
Hodges ..... Dawson
Hogan ..... Lewis and Clark
Holmes ..... Chouteau
Holt ..... Flathead
Homepark ..... Madison
Homestake ..... Jefferson
Hauserlake ..... Lewis and Clark
Houskin ..... Cascade
Howard ..... Rosebud
Howie ..... Sweet Grass
Hoyt ..... Dawson
(Discontinued. Mail to Glendive.)
Hubbart ..... Flathead
Hunters Hot Springs ..... Park
Huntley ..... Yellowstone
Huson ..... Missoula
Hyde ..... Gallatin
Irene ..... Fergus
Iron Mountain ..... Missoula
Jackson ..... Beaverhead
Jardine ..... Park
Jeffers ..... Madison
Jefferson City ..... Jefferson
Jefferson Island ..... Jefferson
Jennings ..... Flathead
Jocko ..... Missoula
Johnson ..... Broadwater
Joliet ..... Carbon
Jones ..... Fergus
Jordan ..... Dawson
Josephine ..... Gallatin
Judith ..... Fergus
Junction ..... Yellowstone
Kalispell (c. h.) ..... Flathead
Kendall ..... Fergus
Kibbey ..... Cascade
Kila ..... Flathead
Kingsley ..... Custer
Kinsey ..... Custer
(Discontinued. Mail to Shirley.)
Kirby ..... Rosebud
Kismet ..... Dawson
(Discontinued. Mail to Leedy.)
Knerville ..... Fergus
Knowlton ..... Custer
Laird ..... Chouteau
Lakeview ..... Madison
Lame Deer ..... Rosebud
Landusky ..... Chouteau
Lat ..... Park
Laurel ..... Yellowstone
Laurin ..... Madison
Lavina ..... Fergus
Lee ..... Rosebud
Leedy ..... Valley
Lennep ..... Meagher
Lewis ..... Meagher
Lewistown (c. h.) ..... Fergus
Lockhart ..... Jefferson
(Discontinued. Mail to Bernice.)
Libby ..... Flathead
Lima ..... Beaverhead
Limespur ..... Jefferson
Lincoln ..... Lewis and Clark
Linley ..... Carbon
Lismas ..... Valley
Livingston (c. h.) ..... Park
Lloyd ..... Chouteau
Lock ..... Rosebud
Lockhart ..... Jefferson
Lockwood ..... Yellowstone
Lodgegrass ..... Rosebud
Lodge Pole ..... Chouteau
Logan ..... Gallatin
Lo Lo ..... Missoula
Lo Lo Hot Springs ..... Missoula
Lombard ..... Broadwater
Long ..... Fergus
Lostlake ..... Chouteau
Lothrop ..... Missoula
Lowry ..... Teton
Lubec ..... Teton
Lyon ..... Madison
Lytle ..... Chouteau
McAllister ..... Madison
McLeod ..... Sweet Grass
McMillan ..... Dawson
Maddux ..... Chouteau
Maiden ..... Fergus
Malta ..... Valley
Mammoth ..... Madison
Manchester ..... Cascade
Manhattan ..... Gallatin
Marias ..... Chouteau
Marion ..... Flathead
Marston ..... Flathead
Martina ..... Missoula
Martinsdale ..... Meagher
Marysville ..... Lewis and Clark
Mason ..... Broadwater
Mauland ..... Fergus
Meaderville ..... Silver Bow
Meadow Creek ..... Madison
Melrose ..... Silver Bow
Melville ..... Sweet Grass
Merrill ..... Sweet Grass
Meyersburg ..... Park
Midland ..... Custer
Midvale ..... Teton
Miles City (c. h.) ..... Custer
Milk River ..... Valley
Millegan ..... Cascade
Milner ..... Fergus
Miner ..... Park
Missoula (c. h.) ..... Missoula
Mitchell ..... Lewis and Clark
Mizpah ..... Custer
(Discontinued. Mail to Knowlton.)
Monarch ..... Cascade
Mondak ..... Valley
Monida ..... Madison
Montford ..... Flathead
Moore ..... Fergus
Moorhead ..... Custer
Morrison ..... Beaverhead
Mosby ..... Dawson
Muir ..... Park
(Discontinued. Mail to Livingston.)
Musselshell ..... Yellowstone
Nashua ..... Vallley
Natal ..... Fergus
Neihart ..... Cascade
Nelson ..... Lewis and Clark
New Chicago ..... Granite
Newlon ..... Dawson
New Year ..... Fergus
Nichol ..... Chouteau
Niles ..... Cascade
Nimrod ..... Missoula
Ninemile ..... Missoula
Norris ..... Madison
Norvella ..... Dawson
Noxon ..... Sanders
Nye ..... Sweet Grass
Oka ..... Meagher
Oldham ..... Chouteau
Ophir ..... Powell
Oswego ..... Valley
Otter ..... Custer
Ovando ..... Powell
Pageville ..... Madison
Park City ..... Yellowstone
Parrot ..... Madison
(Changed to Renova, Jefferson Co.)
Pearl ..... Rosebud

Peskan ..... Teton
Philipsburg (c. h.) ..... Granite
Phillips ..... Chouteau
Pinecreek ..... Park
Pinegrove ..... Fergus
Pioneer ..... Powell
Pipestone Springs ..... Jefferson
Plains ..... Sanders
Pleasant Valley ..... Flathead
Plentywood ..... Valley
Polaris ..... Beaverhead
Polson ..... Flathead
Pony ..... Madison
Poplar ..... Valley
Portage ..... Cascade
Potomac ..... Missoula
Powderville ..... Custer
Preston ..... Custer
Princeton ..... Granite
Pryor ..... Crow Indian Reservation
Puller Springs ..... Madison
(Discontinued. Mail to Homepark.)
Pyretees ..... Ravalli
Quartz ..... Missoula
Racetrack ..... Powell
Radersburg ..... Broadwater
Rancher ..... Rosebud
Ravalli ..... Missoula
Raymond ..... Teton
Red Lodge (c. h.) ..... Carbon
Red Rock ..... Beaverhead
Redstone ..... Valley
Reed Point ..... Sweet Grass
Renova ..... Jefferson
Rexford ..... Flathead
Riceville ..... Cascade
Ridge ..... Custer
Ridgelawn ..... Dawson
Riedel ..... Chouteau
Rimini ..... Lewis and Clark
Riverview ..... Carbon
(Discontinued. Mail to Belfry.)
Rivulet ..... Missoula
Roberts ..... Carbon
Rochester ..... Madison
Rock Creek ..... Park
Rocker ..... Silver Bow
Rockford ..... Fergus
(Discontinued. Mail to Moore.)
Rockvale ..... Carbon
Rogers ..... Fergus
Rollins ..... Flathead
Ronan ..... Missoula
Roscoe ..... Carbon
Rosebud ..... Rosebud
Rosemont ..... Ravalli
Rothiemay ..... Fergus
Roundup ..... Yellowstone
Roy ..... Fergus
Ruby ..... Madison
Sabra ..... Rosebud
Saco ..... Valley
Sadie ..... Custer
(Discontinued. Mail to Miles City.)
Saint Ignatius ..... Misssoula
Saint Pauls ..... Chouteau
Saint Peter ..... Cascade
Saint Regis ..... Missoula
Saint Xavier ..... Rosebud
Salesville ..... Gallatin
Saltese ..... Missoula
Sandcliffs ..... Chouteau
Sand Coulee ..... Cascade
Sandstone ..... Custer
Sapphire ..... Fergus
Satchwell ..... Rosebud
Saypo ..... Teton
Scobey ..... Valley
Sedan ..... Gallatin
Selway ..... Custer
Shannon ..... Meagher
Shawmut ..... Meagher
Shelby ..... Teton
Sheridan ..... Madison
Shields ..... Park
Sidney ..... Dawson
Silesia ..... Carbon
Silver ..... Lewis and Clark
Silver Bow ..... Silver Bow
Silver Star ..... Madison
Sixteen ..... Meagher
Sneath ..... Chouteau
Snowshoe ..... Flathead
Snyder ..... Flathead
Somers ..... Flathead
(South Butte, Station, Butte).
Spanish ..... Madison
Spion Kop ..... Cascade
Springdale ..... Park
Stacey ..... Custer
Stanford ..... Fergus
Stark ..... Missoula
Stearns ..... Lewis and Clark
Steele ..... Chouteau
Stevensville ..... Ravalli
Stockett ..... Cascade
Stone ..... Granite
(Discontinued. Mail to Hall.)
Stone Shack ..... Custer
Storrs ..... Gallatin
Straw ..... Fergus
Stryker ..... Flathead
Stuart ..... Deer Lodge
Sula ..... Ravalli
Sunnyside ..... Cascade
Sun River ..... Cascade
Sunset ..... Powell
Superior ..... Missoula
Swan ..... Flathead
(Discontinued. Mail to Marion.)
Sweet Grass ..... Teton
Swiftcurrent ..... Teton
Taylor ..... Chouteau
Teedee ..... Custer
Terry ..... Custer
Teton ..... Chouteau
Thomas ..... Missoula
(Discontinued. Mail to Desmet.)
Thompson ..... Sanders
Three Buttes ..... Dawson
Tokna ..... Dawson
Tony ..... Carbon
(Discontinued. Mail to Linley.)
Toston ..... Broadwater
Townsend (c. h.) ..... Broadwater
Trout Creek ..... Sanders
Troy ..... Flathead
Twin Bridges ..... Madison
Twodot ..... Meagher
Ulm ..... Cascade
Unger ..... Valley
Unity ..... Meagher
Ural ..... Flathead
Utica ..... Fergus
Valentine ..... Fergus
Vandalia ..... Valley
Viall ..... Dawson
Victor ..... Ravalli
Virgelle ..... Chouteau
Virginia City (c. h.) ..... Madison
Walkerville ..... Silver Bow
Warm Springs ..... Deer Lodge
Warrick ..... Chouteau
Washington Gulch ..... Powell
Waterloo ..... Madison
Watson ..... Meagher

Weede ..... Fergus
Welch ..... Jefferson
Westbutte ..... Chouteau
Whelan ..... Fergus
(Discontinued. Mail to Irene.)
Whitefiesh ..... Flathead
Whitehall ..... Jefferson
Whitepine ..... Sanders
White Sulphur Springs (c. h.) ..... Meagher
Whitlash ..... Chouteau
Wibaux ..... Dawson
Wickes ..... Jefferson
Wilder ..... Fergus
Willis ..... Beaverhead
Willow Creek ..... Gallatin
Witcomb ..... Chouteau
Wolf Creek ..... Lewis and Clark
Wolf Point ..... Valley
Wolfspring ..... Yellowstone
(Discontinued. Mail to Musselshell.)
Wolsey ..... Meagher
Woodman ..... Missoula
Woodside ..... Ravalli
Woodville ..... Jefferson
Woodworth ..... Powell
Yale ..... Fergus
York ..... Lewis and Clark
Zortman ..... Chouteau

ALTITUDES IN MONTANA.

Elevations of Various Places.

Fort Assinniboine	2,650	Glendive	2,069
Augusta	3,500	Great Falls, at G. N. depot	3,331
Avon	4,677	Hamilton	3,776
Basin	5,343	Havre	2,438
Beaverhead	4,464	Jefferson	4,726
Belgrade	4,437	Jocko	3,200
Fort Benton	2,565	Kalispell	2,949
Butte, at Court House	5,767	Kootenai Falls	1,987
Big Sandy	2,709	Laurel	3,255
Big Timber	4,072	Lewis and Clark pass	6,323
Billings	3,117	Livingston	4,487
Blackfoot	4,145	Fort Maginnis	4,310
Boulder	4,920	Malta	2,242
Bozeman	4,754	Marias pass	8,500
Cascade	3,381	Marie	6,355
Chinook	2,401	Martinsdale	4,707
Chouteau	4,000	Marysville	5,376
Cinnabar	5,172	Miles City	2,355
Columbia Falls	3,101	Milk River	2,048
Crow Agency	3,041	Montana City	4,063
Custer	2,727	Mullan pass	5,875
Deer Lodge	4,529	Neihart	5,548
Dillon	5,109	Nyack	3,353
East Helena	3,933	Philipsburg	5,167
Fort Ellis	4,935	Poplar	1,955
Mount Helena	5,484	Pyramid	10,720
Flathead pass, Bridger range	6,769	Red Lodge, Carbon Mercantile Company's Store	5,548
Forsyth	2,514	Rimini	5,183
Fort Custer	2,899	Silver Bow	5,347
Fort Harrison	4,004	Stevensville	3,299
Fort Keogh	2,367	Teton	2,645
Gallatin	4,032	Toluca	3,342
Gallatin Mountain	10,967	Ubet	4,540
Garrison	4,317		

Mountain Elevations.

Arrow Peak	7,420	Judith peak	6,386
Barker mountain	8,152	Lewis and Clark pass	6,323
Big Butte, (Butte City)	6,310	Liberty peak	9,162
Blackmore mountain	10,196	Lone mountain	11,194
Timberline	9,550	McCloud peak	8,850
Bridger peak	9,106	McDonald mountain	9,800
Buckskin pass	7,400	Madison pass	6,911
Cliff mountain	9,120	Middle peak	7,000
Council peak, Crazy mountains	10,737	Monture, geodetic station	7,400
Cowen mountain	11,190	Needles	10,933
Crazy peak	11,178	Old Baldy mountain	9,572
Dearborn mountain	8,480	Ontario mine, at superintendent's house	7,032
Delano mountain	10,200	Pentagon mountain	9,400
Douglas mountain	11,300	Porcupine butte	6,970
Electric peak	11,155	Pyramid	10,720
Timber line	9,442	Rocky peak	9,350
Elk peak	8,606	Scapegoat mountain	9,210
Ellis mountain	8,226	Sheep mountain	10,628
Emigrant peak	10,969	Sphinx mountain	10,844
Flathead pass	6,760	Spring Hill	6,270
Gordon pass	7,400	Stonewall mountain	9,300
Gallatin mountain	10,967	Thunder mountain	7,301
Haystack peak	10,990	Tiger butte	6,571
Hilgard	11,000	Twin peaks	10,246
Holland, geodetic station	10,400	Ward peak	10,267
Hyalite peak	10,110	Wedge mountain	10,508

ELECTION RETURNS.

Result of the Official Count of Ballots Cast at Election of Nov. 6, 1906, for Congressional and State Tickets.

COUNTIES	Congressman				Associate Justice of the Supreme Court			Initiative and Referendum Amendment to Constitution	
	Pray, Rep.	Walsh, Dem.	Calderhead, Pop.	Hudson, Soc.	Smith, Rep.	McClernan, Dem.	Maury, Soc.	For	Against
Beaverhead	901	672	1	19	885	643	17	1,050	135
Broadwater	289	466	1	10	348	400	16	610	71
Carbon	872	614	2	336	924	574	331	1,048	355
Cascade	1,840	1,462	14	424	1,848	1,378	420	2,486	883
Chouteau	1,318	410	2	24	1,128	451	26	1,347	150
Custer	650	296	2	20	695	287	18	676	71
Dawson	704	242	.....	39	720	243	36	703	92
Deer Lodge	1,371	1,403	10	122	1,446	1,331	120	1,346	105
Fergus	1,392	994	3	268	1,418	928	271	1,666	494
Flathead	1,469	1,231	4	139	1,545	1,130	144	2,247	232
Gallatin	1,395	1,199	1	123	1,426	1,122	121	1,856	343
Granite	446	388	1	46	468	344	50	672	98
Jefferson	524	652	2	69	613	544	72	940	128
Lewis and Clark	1,831	1,659	25	194	2,497	1,136	204	2,712	446
Madison	1,057	945	8	61	1,060	919	60	1,389	221
Meagher	305	205	.....	8	319	172	7	265	152
Missoula	1,550	1,166	4	218	1,640	1,035	207	1,087	147
Park	1,051	897	1	247	1,129	780	254	1,431	412
Powell	577	456	1	27	614	407	25	737	156
Ravalli	1,003	727	2	88	1,011	705	86	581	133
Rosebud	374	152	.....	13	373	143	14	391	76
Silver Bow	4,684	5,069	170	1,956	4,636	5,147	1,909	7,783	1,211
Sweet Grass	403	152	.....	22	406	129	22	410	106
Sanders	401	247	2	41	405	231	39	506	73
Teton	491	306	3	23	512	275	23	585	66
Valley	569	306	1	25	579	295	27	722	66
Yellowstone	901	578	1	76	919	405	70	1,128	194
Totals	28,368	22,894	261	4,638	29,564	21,154	4,589	36,374	6,616

INDEX.

A

Pages

Agriculture ..... 125 to 200
Alkali—Experiments in eliminating 128
Barley in the United States 128
Russian 136
Total yield and value of in Montana, 1905 126
Dry land farming—Yields, experiments, etc. ..... 133 to 136
Corn in the United States 127
Elevator capacity 132
Estimate of grain grown in Gallatin Valley, 1905 and 1906 132
Flour production in Gallatin Valley, 1905 132
Hay—Yield and value of in Montana, 1905 126
Livestock ..... 165 to 200
Oats in the United States 127
Total yield and value of in Montana, 1905 126
Potatoes in the United States 128
Yield and value of in Montana, 1905 126
Rye—Yield and value of in Montana, 1905 126
Seeds—Adulteration of and list of firms who adulterate 131
Soil inoculation 137
Sugar Beets ..... 142 to 157
Wheat—Acreage and production of in Montana, 1905 125
In the United States 127
Oats—Estimate of yield in Madison Co., 1906 132
Total yield and value of in Montana, 1905 126
Windmills 129

Agricultural College—Executive Board and Faculty 443

Alfalfa—Cost of irrigating a 40-acre field 103
Irrigation of in Yellowstone Valley 103

Allen Gold Mining Co. 320

Altitudes 467

Anaconda Copper Mining Co.—Production from mines of 319

Apportionment an representation 433

Assessed valuations, 1905 ..... 378 to 387
1906 ..... 388 to 396

Attorneys-General of Montana since statehood 374
Territorial 372

Auditors—State—Directory of since statehood 375
Territorial—Directory of 372

B

Barley in the United States 128
Irrigating in the Gallatin Valley 102
First prize for at the National Irrigation Congress 329
Russian 136
Total yield and value in Montana, 1905 126

Beaverhead County—Description of 304
Directory of county officials 448
Cattle feeding in the Big Hole Basin 171
Crops grown on the Birchdale Stock Farm 132

Beer—Production of 291

Big Horn Irrigation sub-project 80

Billings and Northern Railway—Construction of 303

Bitter Root District Irrigation Co. 343

Bitter Root Valley 346

Pages

Boards—State—Building and Loan Associations 440
Carey Land Act—Directory of 439
Charities and Reform—Directory of 440
Dental Examiners—Directory of 439
Education, Directory of 438
Equalization, Directory of 437
Examiners, Directory of 437
Furnishing, Directory of 437
Health, Directory of 439
Horticulture, Directory of 441
Insane Commissioners, Directory of 438
Land Commissioners—Directory of 437
Medical Examiners, Directory of 439
Osteopathy, Directory of 439
Pardons Directory of 438
Park Commissioners, Great FallsDirectory of 445
Park Commissioners, Helena, Directory of 446
Pharmacy, Directory of 439
Prison Commissioners, Directory of 438
Sheep Commissioners, Directory of 446
Stock Commissioners, Directory of 446
Text Book Commissioners, Directory of 438
Trustees of the Law Library, Directory of 439
Breweries 291
Brick—Production of, 1904 and 1905 ..... 284 and 285
Broadwater County—Description of 306
Directory of officials 448
Building and Loan Associations—Directory of State Board of 440
Butte, Anaconda and Pacific Ry.—Traffic of, 1905 320

C

Carbon County—Description of 308
Directory of officials 449
Farmers' Co-operative Store 161
Farmers' Union 160
Cascade County—Description of 311
Directory of officials 449
Carey Land Act Board—Directory of 439
Cattle feeding in the Big Hole Basin 171
Cattle—Hay-fed 170
Market, 1906 ..... 167 to 170
Shipment from Glasgow 360
Cemeteries and Parks—Land Office entries for 21
Charities and Reform—State Board of—Directory 440
Chicago, Milwaukee and St. Paul Ry.—Construction of 302
Child Labor ..... 208 to 210
Chinook Irrigation System—Acres under and length 69
Chouteau County—Description of 312
Directory of officials 450
Clark's Fork Irrigation Reconnaissance 87
Clerks of Supreme Court in Montana since statehood 376
Coal—Chemical analysis of a typical Montana 272
Geological account of Montana ..... 272 to 283
Production of in Montana, 1904 and 1905 ..... 269 to 270
Production of in Montana, 1880 to 1895 271
Congressional Delegates—Directory of Territorial 373
Congressmen—From Montana since statehood 376
Copper, gold, silver and lead—Production of, 1904 ..... 246 to 259
Production of, 1905 ..... 260 to 268
Copper and lead—Production of by counties, 1904 259
Production of by counties, 1905 268
Corn in the United States 127
Counties—Description of Resources and general information ..... 304 to 364
County officials—Directory of ..... 448 to 461
Court statistics, 1904 and 1905 ..... 418 and 419
Creameries ..... 163 to 164
Custer County—Description of 315
Directory of officials 450

D

Pages

Dawson County—Description of 317
Directory of officials 451
Deaf and Blind School—Directory of 444
Dental Examiners—State Board of 440
Deer Lodge County—Description of 318
Directory of officials 451
Distillery 297
Divorces, 1904 and 1905 ..... 425 and 426
Dodson Irrigation System—Acres under and length of 70
Drainage of land 362
Dry land farming ..... 133 to 136

E

Education—State Board of 438
Eight-Hour day—Supreme Court decision in relation to ..... 214 to 226
Election Returns—Summary of 468
Electricity—Helena Power Transmission Co. 295
Elevator capacity 132
Employers' Liability Law ..... 211 to 213
Equalization—State Board of 437
Examiners—State Board of 437
Experiment Station—Directory of 443
Sub at Billings—Executive Board 444
Extracts—Manufacture of Flavoring in Montana 292

F

Farming—Dry land ..... 133 to 136
Farmers' Mercantile Co. 328
Organizations ..... 158 to 162
Union of Carbon Co. 160
Union, Co-operative store 161
Telephone Co. 327
Fergus County—Description of 321
Directory of officials 452
Flathead County—Description of 323
Directory of officials 452
Flathead Indian Reservation—Number of Indians on 325
Flour production in the Gallatin Valley, 1905 132
Food Manufactures 298
Forest Reserves ..... 35 to 62
Area by reserve 38
Big Belt Reserve 38
Big Hole Reserve 45
Bitter Root Reserve 38
Cabinet Reserve 46
Crazy Mountain Reserve 43
Ekalaka Reserve 45
Elkhorn Reserve 39
Gallatin Reserve 39
Grazing on Forest Reserves 56
Helena Reserve 42
Hell Gate Reserve 39
Highwood Reserve 40
Homesteading on 47
Jurisdiction on 53
Kootenai Reserve 44
Lieu selections on 53
Lewis and Clark Reserve 41
Little Belt Reserve 41
Long Pine Reserve 45
Lo Lo Reserve 44
Madison Reserve 41
Mining on 52
Missoula Reserve 46
Number of in Montana 37
Number of in the United States 37
Officers in charge in Montana 38

Pages
Libraries ..... 365 to 370
State Historical and Miscellaneous—Board of Trustees 439
State Law—Board of Trustees 439
Licenses collected, 1904 ..... 412 to 414
1905 ..... 415 to 418
Lieu selections on Forest Reserves 53
Lieutenant-Governors of Montana, since statehood 374
Lime—Manufacture of in Jefferson county 333
Livestock ..... 165 to 200
Associations 172
Cattle Feeding in Big Hole Basin 171
Cattle market, 1906 ..... 167 to 170
Hay-fed cattle 170
Sheep and wool ..... 175 to 200
Shipping law 170
Wool production ..... 175 and 176
Locating a mineral claim ..... 21 to 26
Lower Milk River Water Users' Association 93
Lower Yellowstone Irrigation project 89
Lower Yellowstone Water Users' Association ..... 90 to 93
By-laws and forms used 81
Lumber Industry ..... 286 to 290

M

Madison County—Description of 336
Directory of officials 455
Estimated yield of wheat and oats, 1906 132
Madison River Irrigation project 77
Madison River Power Co. 337
Manufactures—New—Distillery 297
Food 298
Knitting Mills Co.—The Montana 298
Montana Chemical Co. 292
Packing Plants 300
Woolen Mill—Second to be established in Montana 298
Marias Irrigation project 72
Masonic Home 335
Meagher County—Description of 339
Directory of officials 455
Medical Examiners 439
Merrill & Co.—Packing Plant 300
Milk River Irrigation project 65
Mineral Production, 1904 ..... 246 to 259
1905 ..... 260 to 268
In Montana, 1862 to 1905 268
Mining on forest reserves 52
Missoula County—Description of 339
Directory of officials 456
Missoula River dam 340
Missouri River dam 295
Montana 1
Montana Chemical Co. 292
Montana Packing Co. 301
Mules 200

N

National Guard of Montana—Director of 437
Naturalizations, 1904 and 1905 ..... 420 and 421
1894 to 1905 ..... 422 to 424
New Zealand—Letter from Secretary of Labor 206
Normal College—Executive Board and Faculty ..... 442 and 443
Northern Pacific Ry.—Construction work on 303

O

Oats—Total yield and value in Montana, 1905 126
In the United States 127

Pages
Officers—Directory of elective since Montana admitted to statehood ..... 374 to 377
Directory of territorial to 1889 ..... 371 to 373
Present appointive in state administration 436
Present elective in state administration 436
State ..... 436 to 447
Oil 5
Carbon County 309
Orphans' Home—Directory of 445
Osteopathy—State Board of 439

P

Packing Plants 300
Pancake Flour 299
Pardons—State Board of 438
Park Commissioners—State Board of 445
Park Co.—Description of 342
Directory of officials 456
Penitentiary Statistics ..... 397 to 403
Pharmaceutical Products—Manufacture of 292
Pharmacy—State Board of 439
Postoffices in Montana—Directory of ..... 462 to 466
Potatoes—Yield and value of in Montana, 1905 126
In the United States 128
Powell County—Description of 344
Directory of officials 457
Prison—State—Directory of 440
Commissioners—State Board of 438
Public Range—Leasing of opposed 185

R

Railroad Construction 302
Railway Employees—Hours of ..... 227 to 229
Ranges—Condition of in the United States 186
Ravalli County—Description of 346
Directory of officials 457
Reclamation—Government 64
Reclamation Service 63
Progress of 95
Reform School—Directory of 444
Representative Districts 433
Representatives—House of—Roster of 435
Representatives of the Tenth Legislative Assembly 434
Rosebud County—Description of 349
Directory of officials 458
Royal Milling Co. 311
Rye—Yield and value of in Montana, 1905 126

S

Sanders County—Description of 350
Directory of officials 458
Sapphires 312
Saw Mills ..... 286 to 290
Schools—Money available per capita 5
School of Mines—Trustees and faculty 442
Secretarys of State—Directory of in Montana since statehood 374
Secretaries—Territorial 373
Seeds—Adulteration of and list of firms who adulterate 131
Senate—Members of State 433
Roster of 435
Settlement in Montana 130
Sheep and Wool ..... 175 to 200
Sheep Commissioners—State Board of 446
Sheep Dip—Manufacture of 293

Pages
Libraries ..... 365 to 370
State Historical and Miscellaneous—Board of Trustees 439
State Law Board of Trustees 439
Licenses collected, 1904 ..... 412 to 414
1905 ..... 415 to 418
Lieu selections on Forest Reserves 53
Lieutenant-Governors of Montana, since statehood 374
Lime—Manufacture of in Jefferson county 333
Livestock ..... 165 to 200
Associations 172
Cattle Feeding in Big Hole Basin 171
Cattle market, 1906 ..... 167 to 170
Hay-fed cattle 170
Sheep and wool ..... 175 to 200
Shipping law 170
Wool production ..... 175 and 176
Locating a mineral claim ..... 21 to 26
Lower Milk River Water Users' Association 93
Lower Yellowstone Irrigation project 89
Lower Yellowstone Water Users' Association ..... 90 to 93
By-laws and forms used 81
Lumber Industry ..... 286 to 290

M

Madison County—Description of 336
Directory of officials 455
Estimated yield of wheat and oats, 1906 132
Madison River Irrigation project 77
Madison River Power Co. 337
Manufactures—New—Distillery 297
Food 298
Knitting Mills Co.—The Montana 298
Montana Chemical Co. 292
Packing Plants 300
Woolen Mill—Second to be established in Montana 298
Marias Irrigation project 72
Masonic Home 335
Meagher County—Description of 339
Directory of officials 455
Medical Examiners 439
Merrill & Co.—Packing Plant 300
Milk River Irrigation project 65
Mineral Production, 1904 ..... 246 to 259
1905 ..... 260 to 268
In Montana, 1862 to 1905 268
Mining on forest reserves 52
Missoula County—Description of 339
Directory of officials 456
Missoula River dam 340
Missouri River dam 295
Montana 1
Montana Chemical Co. 292
Montana Packing Co. 301
Mules 200

N

National Guard of Montana—Director of 437
Naturalizations, 1904 and 1905 ..... 420 and 421
1894 to 1905 ..... 422 to 424
New Zealand—Letter from Secretary of Labor 206
Normal College—Executive Board and Faculty ..... 442 and 443
Northern Pacific Ry.—Construction work on 303

O

Oats—Total yield and value in Montana, 1905 126
In the United States 127

Pages

Officers—Directory of elective since Montana admitted to statehood ..... 374 to 377
Directory of territorial to 1889 ..... 371 to 373
Present appointive in state administration 436
Present elective in state administration 436
State ..... 436 to 447
Oil 5
Carbon County 300
Orphans' Home—Directory of 445
Osteopathy—State Board of 439

P

Packing Plants 300
Pancake Flour 299
Pardons—State Board of 438
Park Commissioners—State Board of 445
Park Co.—Description of 342
Directory of officials 456
Penitentiary Statistics ..... 397 to 403
Pharmaceutical Products—Manufacture of 292
Pharmacy—State Board of 439
Postoffices in Montana—Directory of ..... 462 to 466
Potatoes—Yield and value of in Montana, 1905 126
In the United States 128
Powell County—Description of 344
Directory of officials 457
Prison—State—Directory of 440
Commissioners—State Board of 438
Public Range—Leasing of opposed 185

R

Railroad Construction 302
Railway Employees—Hours of ..... 227 to 229
Ranges—Condition of in the United States 186
Ravalli County—Description of 346
Directory of officials 457
Reclamation—Government 64
Reclamation Service 63
Progress of 95
Reform School—Directory of 444
Representative Districts 433
Representatives—House of—Roster of 435
Representatives of the Tenth Legislative Assembly 434
Rosebud County—Description of 349
Directory of officials 458
Royal Milling Co. 311
Rye—Yield and value of in Montana, 1905 126

S

Sanders County—Description of 350
Directory of officials 458
Sapphires 312
Saw Mills ..... 286 to 290
Schools—Money available per capita 5
School of Mines—Trustees and faculty 442
Secretarys of State—Directory of in Montana since statehood 374
Secretaries—Territorial 373
Seeds—Adulteration of and list of firms who adulterate 131
Senate—Members of State 433
Roster of 435
Settlement in Montana 130
Sheep and Wool ..... 175 to 200
Sheep Commissioners—State Board of 446
Sheep Dip—Manufacture of 293

Pages

Sheep -Australian 194
Inspectors—Directory of 447
Number of in the United States 183
Number in the world, by countries 197
Search for a range 186
Slaughter and movement of 190
Statistics of, by states 189
Weight and shrinkage 190
Shearing 198

Silver Bow County—Description of 352
Directory of officials 459

Silver and gold—Production of in Montana, by counties, 1904 257
Prouction of in Montana, by counties, 1905 265

Silver, gold, lead and copper—Production of, 1904 ..... 246 to 259
Production of, 1905 ..... 260 to 268

Soil Inoculation 137

Soldiers' Home—Directory of 445

Spices—Manufacture of 292

Spotted fever 235

State Board of Building and Loan Associations 440
Charities and Reform 440
Commissioners for Insane 438
Dental Examiners 439
Education 438
Equalization 437
Examiners 437
Health 440
Horticulture 441
Land Commissioners 437
Medical Examiners 439
Osteopathy 439
Pardons 438
Park Commissioners 445
Prison Commissioners 438
Sheep Commissioners 446
Stock Commissioners 446
Text Book Commissioners 438

State Fruit Inspectors 441
Furnishing Board 437
Historical Library—Board of Trustees 439
Land ..... 32 to 34

St. Mary Irrigation project 65

Stock Commissioners—State Board of 446

Stock Food—Manufacture of 293

Sweet Grass County—Description of 354
Directory of officials 459

Sun River Irrigation project 74

Sugar Beets ..... 142 to 157
Cultivation of 151
Culture of, Teton county 358
Early work on 150
Estimated production of sugar in the U. S., 1906 156
Fall levelling of ground 148
Fall work 148
First irrigation of 152
Land to be avoided 148
Operation of the seeder 153
Plant on alfalfa land 148
Preparing miscellaneous land 149
Present development in the U. S. 154
Seeding 151
Selection of land for 148
Special tools required 150
Spring work on 149
Thinning beets 152

Sugar Factory at Billings 142
Sample contract to supply labor 145
Sample contract with growers 143

Pages

Superintendents of Public Instruction—Directory of since statehood 375
Territorial Directory 373
Supreme Court Clerks—Directory of since statehood 376
Supreme Court—Directory of 436
Supreme Court Justices—Directory of 375
Of Montana Territory to 1889 371

T

Teton County—Description of 357
Directory of officials 460
Text Book Commission—State Board of 438
Tie Preserving Plant 326
Townsites on forest reserves 52
Public lands ..... 18 to 21
Treasurers of Montana—Since statehood 375
Territorial 372
Trespass on forest reserves 59

U

U. S. Attorneys—Territorial 372
U. S. Marshals—Territorial 372
U. S. Officials—Directory of ..... 429 to 432
University of Montana—Executive Committee 441
University of Montana—Faculty 442

V

Valley County—Description of 359
Directory of officials 460

W

Waco-Sanders Irrigation Sub-project 80
Wages ..... 232 to 234
Washoe Smelter ..... 251 and 319
Water—Acquisition of water rights 120
Administrative system 121
Duty of 120
Duty of in court decrees ..... 109 and 110
Duty of in Montana 104
Evaporation of from Montana canals 112
Losses from canals by seepage 113
Losses in conveyance of 111
Pumping for irrigation 122
Rights should be defined and established 115
Units of measurement 108
Waste of 113
Water Users' Association—Lower Milk River 93
Lower Yellowstone ..... 87 and 90 to 93
Water Rights—Adjudication of existing 118
Transfer of 117
Under Government works 94
Wheat—Acreage and production of in Montana, 1905 125
In the United States 127
Total yield and value in Montana, 1905 126
Wheat Creamlets 299
Wheat and Oats—Estimated yield in Madison County, 1906 132
Whisky—Manufacture of 297
Windmills 129
Wool—Argentine and Uruguay 194
Argentine imported into the U. S. 194
English market conditions 192
Imported and where from, by years, 1896 to 1906 196
Largest individual grower in America 182
London sales 192
Prices of 177
Production, 1905 176
Production of, 1906 175
Pulled 187
Production of, pulled and fleece, washed and in the grease, by years, 1888 to 1906 191
Scoured, fleece and pulled by years, 1888 to 1906 191

Pages
Statistics of for the U. S., by states 189
Value of clip, 1901 to 1906 191
Woolen Mill—Big Timber 355
Manchester 298
Woolgrowers' Commission Co. ..... 178 to 182
Wool Market—Billings takes first place in 1906 177

Y

Yellowstone County—Description of 361
Directory of officials 461